

Participant Handbook

Sector
Apparel

Sub-Sector
Apparel

Occupation
Designing

Reference ID: **AMH/Q1210, Version 4.0**
NSQF level: **4**



**Assistant Designer-
Apparel, Made ups
and Home Furnishings**

Published by

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Shri Narendra Modi
Prime Minister of India

“

Skill development of the new generation is a national need and is the foundation of Aatmnirbhar Bharat

”



Certificate

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for

SKILLING CONTENT: PARTICIPANT HANDBOOK

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The preparation of this handbook would not have been possible without the Fashion Industry’s support. Industry feedback has been extremely encouraging from inception to conclusion and it is with their input that we have tried to bridge the skill gaps existing today in the industry.

This participant handbook is dedicated to the aspiring youth who desire to achieve special skills which will be a lifelong asset for their future endeavours.

About this book

Welcome to the “Assistant Designer- Apparel, Made ups and Home Furnishings” training programme. This PHB is designed to provide participants with comprehensive knowledge about the principles and practices of maintaining security, ensuring vigilance, and safeguarding premises. It also focuses on planning, executing, and managing routine security tasks, conducting inspections, and verifying the integrity of individuals and documents as part of field operations.

This Participant Handbook is designed based on the Qualification Pack (QP) under the National Skill Qualification framework (NSQF) and it comprises of the following National Occupational Standards (NOS)/ topics and additional topics.

1. AMH/N1211: Develop proto and fit samples
2. AMH/N1222: Evaluate the proto sample developed related to specific product class
3. AMH/N1223: Maintain health, safety and security in the designing department with Gender and PwD Sensitization
4. AMH/N2001: Select fabrics, trims and accessories as per specific product category
5. AMH/N0311. Abide by industry, regulatory, and organizational mandates, while integrating environmentally friendly practices
6. AMH/N1210: Plan and prepare design collections of garments for a season
7. DGT/VSQ/N0102:Employability Skills (60 Hours)

Symbols Used



Key Learning
Outcomes



Unit
Objectives



Exercise



Tips



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Summary

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8.	Employability Skills (DGT/VSQ/N0102) Employability Skills is available at the following location - https://www.skillindiadigital.gov.in/content/list Scan the QR code below to access the ebook	179
9.	Annexure	181



1. Introduction and Orientation to Assistant Designer-Fashion, Home and Made-Ups



Unit 1.1 - Assistant Designer- Apparel, Made ups and Home Furnishings Duties

Unit 1.2 - Trends and Opportunities in Home Fashion



Key Learning Outcomes



By the end of this module, the participants will be able to:

1. Elaborate on job opportunities for Assistant Designers in fashion, home, and made-ups.
2. Elucidate the apparel production process and the Assistant Designer's role in it.
3. Outline key responsibilities of an Assistant Designer in apparel and home furnishings.
4. Describe current trends in the home furnishing industry.

UNIT 1.1: Assistant Designer- Apparel, Made ups and Home Furnishings Duties

Unit Objectives

By the end of this unit, the participants will be able to:

1. Elucidate how the apparel production process works and where the Assistant Designer contributes.
2. Outline the main duties of an Assistant Designer in both apparel and home furnishing sectors.

1.1.1 Apparel Production Process and Role

The apparel production process encompasses stages from design to quality checking, relying on both traditional skills and modern machinery for bulk manufacturing. Localised supply chains and seasonal factors significantly impact material availability, labour, and production timelines.



Fig. 1.1.1: Apparel production process and role

Apparel Made-Ups and Home- Furnishing Sector Skill Council

The Apparel Made-Ups and Home Furnishing Sector Skill Council (AMHSSC) is an Indian government-recognised body under the Ministry of Skill Development and Entrepreneurship. It aims to develop a skilled workforce for the apparel, made-ups, and home furnishing sectors by setting industry standards, providing training, and offering certifications in collaboration with industry partners.



**APPAREL MADE-UPS HOME FURNISHING
SECTOR SKILL COUNCIL**

Fig. 1.1.2: Apparel made-ups and home- furnishing sector skill council official logo

Who is an Assistant Designer- Apparel, Made ups and Home Furnishings?

An Assistant Designer in the apparel, made-ups, and home furnishings sector supports the lead designer by developing concepts, selecting materials, and creating samples. They ensure designs align with market trends, client needs, and production capabilities. The following involve the key-job roles of an Assistant Designer- Apparel, Made ups and Home Furnishings:



Fig. 1.1.3: An assistant designer- apparel, made ups and home furnishings

The following involve the key-job roles of an Assistant Designer- Apparel, Made ups and Home Furnishings:

- **Develop proto and fit samples**

The Assistant Designer helps create the initial garment sample from the approved sketch by coordinating with pattern makers and tailors.

- **Evaluate the proto sample developed**

They assess the sample for style, fit, and finish and suggest necessary corrections based on design expectations.

- **Select Fabrics Trims Accessories Product-wise**

The designer selects suitable materials like fabrics, laces, and buttons, considering function, aesthetics, cost, and availability.

- **Follow Industry Regulatory Eco-Friendly Mandates**

They ensure materials and processes meet safety and environmental standards while promoting sustainable practices.

- **Plan and prepare design collections of garments for a season**

The designer supports seasonal collection planning through mood boards, trend research, sketches, and swatches.

- **Ensure Safe Inclusive Work Environment (Miscellaneous function)**

They help maintain a safe, inclusive workspace by encouraging respectful behaviour and promoting gender and disability sensitivity.

1.1.2 Assistant Designer Responsibilities in Apparel

An Assistant Designer in apparel, made-ups, and home furnishings supports the lead designer in creating and developing design concepts, samples, and collections. They help select fabrics, trims, and accessories, and assist in preparing mood boards, proto samples, and pattern layouts. In the domestic production ecosystem, they play a crucial role in aligning design with market trends, client needs, and available resources. The following involve the key responsibilities of an Assistant Designer—Apparel, Made-ups, and Home Furnishings:

- **Create initial and fit sample garments**

The Assistant Designer prepares the first version of the garment, known as the initial or fit sample, based on the approved design. This sample is used to check size, shape, and garment construction. Inputs from technical teams help refine the design further before mass production.

- **Assess and approve prototype samples**

After the sample is developed, the designer reviews it carefully for styling, technical accuracy, and fit. They mark corrections or approve the piece for production. This step ensures consistency and quality in final products.

- **Choose suitable materials per product category**

The designer identifies the best fabrics and accessories according to the product's use—whether for casual wear, formalwear, or home furnishings. They consider texture, weight, function, and price while making selections. This ensures both design appeal and practical usability.

- **Comply with industry and environmental standards**

The Assistant Designer ensures that raw materials and manufacturing processes follow industry regulations. Focus is placed on sustainability, eco-friendly dyes, and ethical sourcing. They also help document compliance for audits and certifications.

- **Organise seasonal garment design collections**

Each season, the designer helps curate a cohesive collection of garments aligned with trends and customer expectations. They develop theme boards, choose colours and fabrics, and assist in visual presentations. These collections reflect brand identity and seasonal creativity.

- **Maintain a safe and inclusive workspace**

The Assistant Designer contributes to a respectful and safe workplace for all team members. They support policies that prevent discrimination and encourage diversity. Workplace safety, mutual respect, and ethical behaviours are key focus areas.

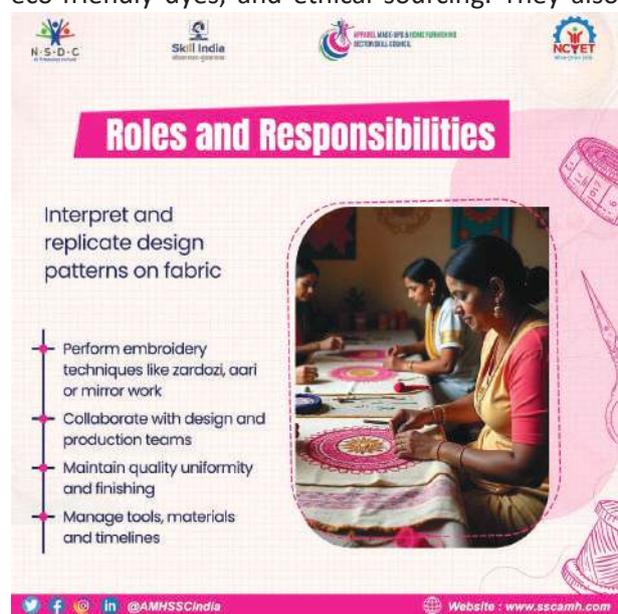


Fig. 1.1.4: Assistant designer responsibilities in apparel

UNIT 1.2: Trends and Opportunities in Home Fashion

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe the latest developments and trends shaping the home furnishing industry.
2. Elaborate on potential career options for Assistant Designers in fashion, home, and made-ups.

1.2.1 Latest Trends in Home Furnishings

Home furnishings in India are evolving by combining traditional craftsmanship with modern, sustainable, and personalised design trends. In 2024, the market was valued at INR 56,330 crore (\approx USD 6.96 billion), reflecting growing demand driven by urban lifestyles and cultural fusion.

- **Sustainable and Eco-Friendly Materials**

Use of organic cotton, bamboo, jute, and recycled textiles in curtains, rugs, and upholstery is on the rise. These choices reflect growing consumer demand for environmentally responsible and ethically produced home products. Brands are also shifting to low-impact dyes and biodegradable packaging. This trend aligns with global movements toward green living and conscious consumption.

- **Artisanal and Handcrafted Designs**

Traditional techniques—handloom weaving, block prints, Kantha and Kalamkari embroidery—are regaining popularity. These crafts inject cultural richness and uniqueness into contemporary homes. Homegrown artisans and local design clusters are being supported through e-commerce platforms. The revival of regional styles also boosts rural employment and preserves heritage.

- **Minimalist and Neutral Palettes**

Neutral tones like beige, ivory, and grey dominate interior schemes, promoting calm and simplicity. Clean lines and subtle patterns support a clutter-free, elegant aesthetic. This trend complements modern urban lifestyles where space is limited and functionality is key. Scandinavian and Japanese influences are especially popular in minimalist Indian interiors.

- **Bold Prints and Maximalism**

Contrasting the minimal trend, bold colours, tropical motifs, and layered textures are gaining traction. This trend enhances vibrancy and personal expression through décor. Animal prints, floral wallpapers, and bright cushions are used to create eye-catching rooms. It appeals especially to younger homeowners looking to make bold style statements.

- **Smart and Functional Furnishings**

Urban Indian homes increasingly favor multi-functional furniture and tech-enabled products such as motorised blinds or lighting-integrated upholstery. These innovations address space constraints and modern lifestyle needs. Foldable furniture, storage beds, and automated home textiles are being widely adopted. Technology is blending with aesthetics to create intelligent yet cozy living environments.

- **Mix of Traditional and Modern Styles**

There's growing appeal for fusion designs—like carved wood pieces paired with sleek, contemporary fabrics. This blend creates balanced yet striking home interiors. Ethnic prints are now used in modular furniture and pastel-painted vintage pieces are being upcycled. The mix-and-match style celebrates both heritage and innovation in home décor.

- **Personalised and Custom-Made Décor**

Made-to-order curtains, embroidered linens, and bespoke cushions show rising demand for customisation. Personal touches help homeowners reflect individual identities in their decor. Online platforms now allow customers to design their own furnishings, choosing fabric, size, and embroidery. This trend is driven by a desire for uniqueness, emotional connection, and exclusivity in living spaces.

(Reference: IMARC Group, 2024. India home furnishings market size reached INR 56,330.0 Crore in 2024. IMARC Group. Available at: [link] (Accessed July 2025).

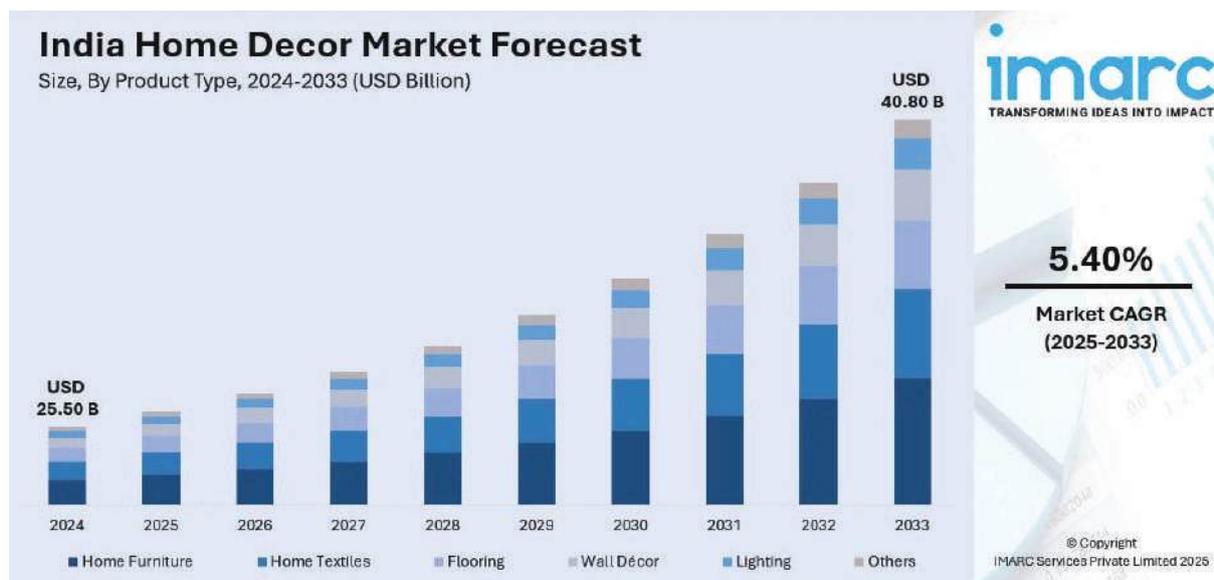


Fig. .1.2.1: Apparel, furnishings, made-ups and home-décor market in India (IMARC)

1.2.2 Career Options for Assistant Designers (Apparel, Made ups and Home Furnishings)

India's expansive textile and design sector offers abundant opportunities for assistant designers, who are crucial in concept development, sampling, and quality control. These professionals contribute to apparel, home décor, and textile industries by assisting with mood boards, sketching, fabric selection, and production coordination. With a growing emphasis on sustainable design and global demand, their roles, which also include trend research and CAD software use, are becoming increasingly vital. The following are the different types of employment opportunities and career progression options for an Assistant Designer (Apparel, Made ups and Home Furnishings):

- **Career Progression Pathways:**

India's thriving textile and design sector offers diverse opportunities, with assistant designers playing a vital role in concept development, sampling, and quality control. These professionals support the creation of apparel, home décor, and textile products, utilising skills from sketching to trend research. Career progression can lead from Junior Designer to Senior Designer or Creative Director, with options for freelance or entrepreneurial paths, accelerated by continuous skill upgrades.

- **Assistant Designer:**

This entry-level role involves supporting senior designers with various tasks, including mood board creation, sketching, fabric selection, and coordinating with sampling units. They gain

foundational experience across apparel, home décor, and textile industries, assisting in the initial stages of product development.

○ **Junior Designer:**

Building on the assistant role, junior designers take on more responsibility in design conceptualisation and execution. They often manage specific design projects, develop initial prototypes, and refine designs based on feedback, contributing more significantly to the creative process.

○ **Design and Production Executive:**

These professionals play a vital role in turning design concepts into finished products by coordinating between designers and production teams. They manage material sourcing, timelines, and quality control while ensuring effective communication across departments. Their responsibilities also include organising design assets, streamlining workflows, and supporting the smooth execution of design projects.

○ **Senior Designer:**

With extensive experience, a senior designer leads design projects, mentors junior staff, and plays a significant role in shaping the brand's aesthetic and strategy. They are responsible for developing complete collections, identifying key trends, and ensuring designs meet market demands and company objectives.

○ **Creative Director:**

This leadership position involves overseeing the entire creative vision and strategy of a company or brand. Creative directors guide all design teams, manage brand identity, and make high-level decisions regarding design direction, marketing campaigns, and overall aesthetic.

○ **Self-Employed Options:**

● **Freelance Designer:**

An independent professional, a freelance designer offers their expertise to various clients on a project basis. They manage their own work, build client relationships, and have the flexibility to specialise in niche areas or work across different design disciplines.

● **Entrepreneur:**

An entrepreneur in this field launches and manages their own design-focused business, which could be a fashion label, a home furnishing brand, or a textile manufacturing unit. They are responsible for all aspects of the business, from design and production to marketing and sales.

● **Design Consultant:**

A design consultant provides expert advice and guidance to businesses on various design-related challenges and opportunities. They leverage their experience to help clients with trend forecasting, brand development, product strategy, and improving overall design processes.

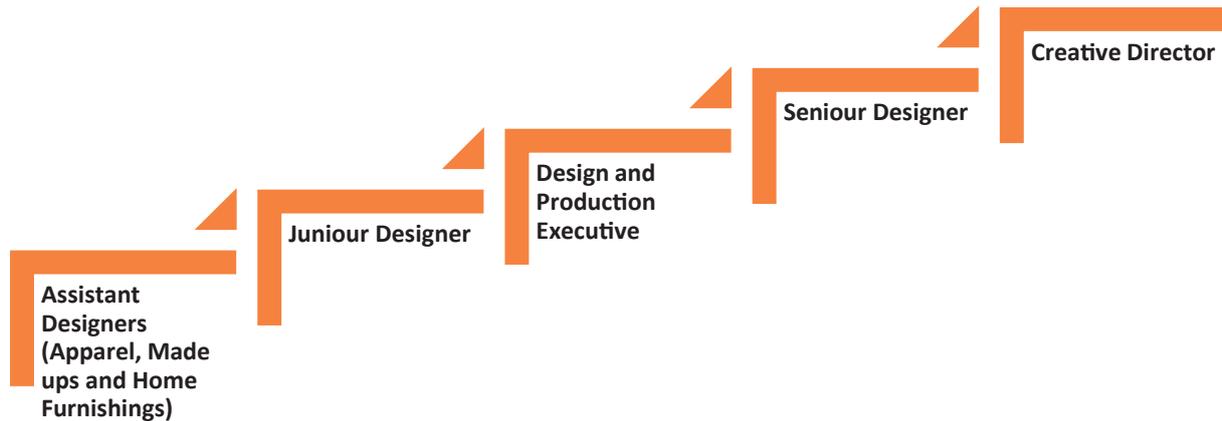


Fig. 1.2.2: Career progression pathways for an assistant designer (apparel, made ups and home furnishings)

- **Employment Sectors and Industries**

Assistant designers are employed across fashion retail companies, home furnishing brands, export houses, textile mills, craft-based clusters, and design studios. They can also find roles in government-supported handicraft initiatives, e-commerce platforms, and sustainable design ventures. India's textile and apparel industry employed over 45 million people in 2023, and this figure is expected to grow with rising domestic and international demand (Ministry of Textiles, 2024).

- **Apparel Industry**

India's apparel sector, valued at USD 75 billion in 2024, is one of the largest globally, offering roles in men's, women's, and children's wear design (IBEF, 2024). Assistant designers in this sector work with senior teams to create clothing collections, plan seasonal lines, and oversee fittings. They find jobs in domestic brands, export houses, and fast fashion companies such as Reliance Trends, Shoppers Stop, and Arvind Lifestyle.

- **Made-Ups and Home Furnishings**

Made-ups include products like bed sheets, table linens, and towels, while home furnishings cover curtains, upholstery, and décor accessories. Assistant designers contribute by selecting textiles, developing surface ornamentation, and adapting traditional crafts for contemporary tastes. The Indian home furnishing market reached a value of INR 56,330 crore (\approx USD 6.96 billion) in 2024, reflecting rising demand for stylish, personalised living spaces (IMARC Group, 2024).

- **Export and Buying Houses**

Export and buying houses serve as a major employer of assistant designers, especially those working with European and American clients. Designers in these companies align Indian production with global design trends and quality standards. Assistant designers handle tech packs, fabric swatches, sample development, and client presentations in companies such as Triburg, Texport, and Shahi Exports.

- **Craft-Based and Sustainable Design Enterprises**

India's rich craft heritage offers opportunities in sectors promoting handloom, block prints, and eco-friendly textiles. Assistant designers collaborate with artisans, NGOs, or start-ups to design eco-conscious collections using organic or recycled fabrics. Brands like Fabindia, Dastkar, and Okhai offer platforms where assistant designers contribute to rural livelihoods while creating modern lifestyle products.

o **E-commerce and Online Customisation Platforms**

Online retail has expanded job roles for assistant designers, especially in companies offering custom furnishings and apparel. Designers here assist in developing digital design tools, customer personalisation options, and virtual fittings. Companies like Pepperfry, Myntra, and Fabuliv hire assistant designers to ensure visual appeal and customisation in product lines.

o **Opportunities backed by GOI**

The Government of India (GOI) has identified the textile and apparel sector as a key employment generator under schemes like PM MITRA, SAMARTH, and National Technical Textiles Mission. These initiatives have opened up new opportunities for assistant designers in integrated textile parks, skill development centres, and design innovation hubs. With focused support for designed manufacturing and exports, assistant designers can find employment in MSMEs, export clusters, handicraft zones, and technical textile firms across India (Ministry of Textiles, 2024).



Fig. 1.2.3: Employable industries for an assistant designer (apparel, made ups and home furnishings)

Type of Work for Assistant Designers

Assistant designers are responsible for assisting in mood board creation, sketching, selecting fabrics and trims, coordinating with sampling units, and managing production documentation. In apparel, they help create clothing lines; in made-ups and home furnishings, they assist in designing products like curtains, bed linens, cushions, and rugs. Their role also includes trend research, colour coordination, and using software like CAD or Adobe Illustrator.

Type of Work	Function
Concept Development Support	Assisting in mood board creation, sketching designs, and coordinating colour palettes.
Material Selection	Selecting appropriate fabrics and trims for designs.

Type of Work	Function
Sampling & Production	Coordinating with sampling units for prototype development and managing production documentation. This includes helping to create clothing lines in apparel and designing products like curtains, bed linens, cushions, and rugs in made-ups and home furnishings.

Table 1.2.1: Work categories for an assistant designer (apparel, made ups and home furnishings)

Summary

- An Assistant Designer helps in designing clothes, home products, and made-up items.
- There are many job opportunities for Assistant Designers in fashion and home furnishing.
- The apparel production process includes design, sampling, cutting, stitching, and finishing.
- Assistant Designers support senior designers during the entire production process.
- They help in creating design sketches and choosing fabrics and colours.
- Assistant Designers work in both the fashion industry and home furnishing companies.
- Their duties include market research, trend analysis, and supporting sample development.
- They also help in quality checks and follow-ups during production.
- In home furnishings, trends change with seasons and customer preferences.
- New trends in home fashion include eco-friendly materials and bold prints.
- Assistant Designers can work in fashion brands, textile companies, or as freelancers.
- This role offers growth in creative design, merchandising, and product development.

Exercise

Multiple-choice Question:

1. What is one of the key duties of an Assistant Designer?
 - a. Managing accounts
 - b. Stitching all garments
 - c. Supporting design and development
 - d. Selling products online

2. Where can Assistant Designers find job opportunities?
 - a. Hospitals
 - b. Fashion houses and home furnishing brands
 - c. Grocery stores
 - d. Banks

3. What is included in the apparel production process?
 - a. Cooking and cleaning
 - b. Designing, cutting, stitching, and finishing
 - c. Filing and copying
 - d. Banking and finance

4. What are current trends in home furnishings?
 - a. Bold prints and eco-friendly materials
 - b. Ancient designs only
 - c. Heavy wood furniture
 - d. Monochrome cement floors

5. Which of the following is a work area for an Assistant Designer?
 - a. Textile and apparel companies
 - b. Car manufacturing units
 - c. Law firms
 - d. IT data centres

Descriptive Questions:

1. Write a short note on the role of an Assistant Designer in the fashion industry.
2. Explain the steps in the apparel production process.
3. Describe the responsibilities of an Assistant Designer in home furnishing.
4. What are some current trends in the home fashion industry?
5. Mention various career options available for Assistant Designers.



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2. Develop Proto and Fit Samples



Unit 2.1 - Sample Development and Production Process

Unit 2.2 - Techpack, Costing, and Pattern Making



AMH/N1211

Key Learning Outcomes

By the end of this module, the participants will be able to:

1. Elaborate on the procedures followed in developing fit samples to meet both design and quality standards.
2. Describe how fit samples are developed using design specifications and industry guidelines.
3. Elaborate on the process of creating proto and fit samples based on a revised Techpack for a specific style.
4. Describe the method of translating Techpack details into accurate proto and fit samples.
5. Elucidate the different stages in the product manufacturing cycle and their link to sample development.
6. Elucidate the manufacturing flow that supports proto sample creation and production planning.
7. Outline the key records and specifications needed during proto development across various stages.
8. Illustrate the importance of maintaining proper documentation at every step of proto sample development.
9. Construct proto and fit samples precisely by following each instruction in the Techpack.
10. Prepare samples in a logical sequence, ensuring each component is assembled as per the given Techpack.

UNIT 2.1: Sample Development and Production Process

Unit Objectives

By the end of this unit, the participants will be able to:

1. Elaborate on the steps involved in developing fit samples based on design and quality requirements.
2. Describe the method to create proto and fit samples as per the revised Techpack for a specific style.
3. Elucidate the overall product manufacturing process, highlighting its relevance to sample development.
4. Outline the documentation and specifications required at various stages of proto sample development.
5. Construct proto and fit samples following the Techpack instructions and proper assembly sequence.

2.1.1 Steps for Developing Fit Samples

Fit samples across apparel, home furnishings, made-ups, and decors are preliminary versions of products used to meticulously check and adjust dimensions, drape, comfort, and overall aesthetic before full-scale production.

Type of Fit Sample	Purpose	Images
Proto Sample	First sample created to visualise the initial design and construction.	
Fit Sample	Checks garment or product fitting, measurements, and ease of movement.	
Size Set Sample	Ensures size consistency across all intended size ranges.	

Type of Fit Sample	Purpose	Images
Pre-Production Sample (PP Sample)	Final sample approved before starting bulk production.	
Salesman Sample (SMS)	Used by sales teams to present the product to buyers or retailers.	
Top of Production Sample (TOP Sample)	Taken from the first batch of mass production to verify quality and fit.	
Shipment Sample	Sent with the final shipment to confirm the bulk matches approved samples.	
Sealed Sample	A reference sample sealed and approved for future quality comparison.	

Table 2.1.1: Types of fit samples

Developing fit samples is a structured process that ensures the product's design and functionality align with both technical standards and customer expectations. Assistant designers play a central role in planning, executing, and refining samples by collaborating with multiple departments and using standard tools. This process includes proto development, role delegation, customer need integration, resource planning, and team coordination—following guidelines set by organisations like the Textile Committee (Ministry of Textiles, GOI) and Apparel Made-Ups and Home Furnishing Sector Skill Council (AMHSSC).



वस्त्र मंत्रालय MINISTRY OF TEXTILES

Fig. 2.1.1: Ministry of Textiles official logo

The following are the stages of developing fit samples:

- **Developing Proto and Fit Samples**

Proto samples are the first physical interpretation of the design, made using basic or similar materials to assess silhouette, stitching construction, and overall aesthetics. Fit samples are the next stage, focusing on accurate body measurements, garment balance, ease of movement, and wearability—especially critical in apparel and home textile items like cushion covers or curtains. Standard size charts (e.g., from NIFT or BIS) and body measurement tools such as tailor's tapes, dress forms, or 3D fitting software (e.g., Tukatech, CLO3D) are used to evaluate and refine the fit.



Fig. 2.1.2: Fit sample prototype

- **Assigning Sample Development Team Roles**

Team roles are distributed among pattern masters, tailors, fabric cutters, and quality checkers to ensure accountability and clarity. Assistant designers coordinate tasks such as sketch interpretation, CAD pattern generation, seam construction, and stitching sequence execution. Clear role assignments follow best practices recommended by AMHSSC and improve productivity while minimising duplication or errors in sampling.

Team Role	Key Responsibilities
Assistant Designer	Coordinates sampling tasks, interprets sketches, and manages timelines.
Pattern Master	Develops patterns from sketches or CAD, ensures accurate sizing and fit.
Tailor/Stitchery	Constructs samples using specified stitching techniques and finishes.
Fabric Cutter	Cuts fabric based on pattern layout, grainline, and marker plan.
Quality Checker	Inspects samples for stitching, fit, and finishing defects.
CAD Operator	Creates digital patterns, markers, and 3D visualisations using software.
Sampling Supervisor	Oversees the entire sampling unit, ensures coordination and quality compliance.
Embellishment Technician	Applies embroidery, prints, or surface finishes as per design instructions.
Trims and Material Coordinator	Sources and manages accessories, trims, and sample material requirements.
Documentation Assistant	Maintains records of changes, approvals, and feedback in sample development.

Table 2.1.2: Role of sample development teams

- **Prioritising Customer Needs in Samples**

Customer-centric sampling involves aligning every aspect—design, fabric texture, colour, comfort, and usability—with the end-user’s expectations. Assistant designers collect customer feedback, refer to buyer technical packs, and make necessary modifications to enhance acceptance and user satisfaction. Fit samples are also cross-checked using parameters like shrinkage (3–5%), drape coefficient, and tolerances (+/- 0.5 to 1.0 cm) for critical measurements.

Term	Definition	Formula
Shrinkage	Reduction in fabric dimensions after washing or processing.	$\text{Shrinkage (\%)} = \frac{[(\text{Original Length} - \text{Final Length}) / \text{Original Length}] \times 100}{100}$
Drape Coefficient	Ratio that measures how much a fabric drapes or hangs under its own weight.	$\text{Drape Coefficient} = \frac{(\text{Area of draped fabric} / \text{Area of full circle}) \times 100}{100}$

Term	Definition	Formula
Tolerances	Allowable variation in garment measurements from the standard or spec sheet.	Tolerance = ± value specified (e.g., ±0.5 to ±1.0 cm for critical measurements)

Table 2.1.3: Sampling formulas

• **Planning Sample Development Activities**

Sample development planning includes preparing a Time and Action (T&A) calendar, estimating material costs, and scheduling fittings or review meetings. Tools such as Excel sheets, production tracking software, and visual Gantt charts help monitor sample timelines and milestone achievements. Following Quality Management Systems (QMS) promoted by GOI’s Quality Council of India, this structured planning reduces lead times and ensures quality consistency.

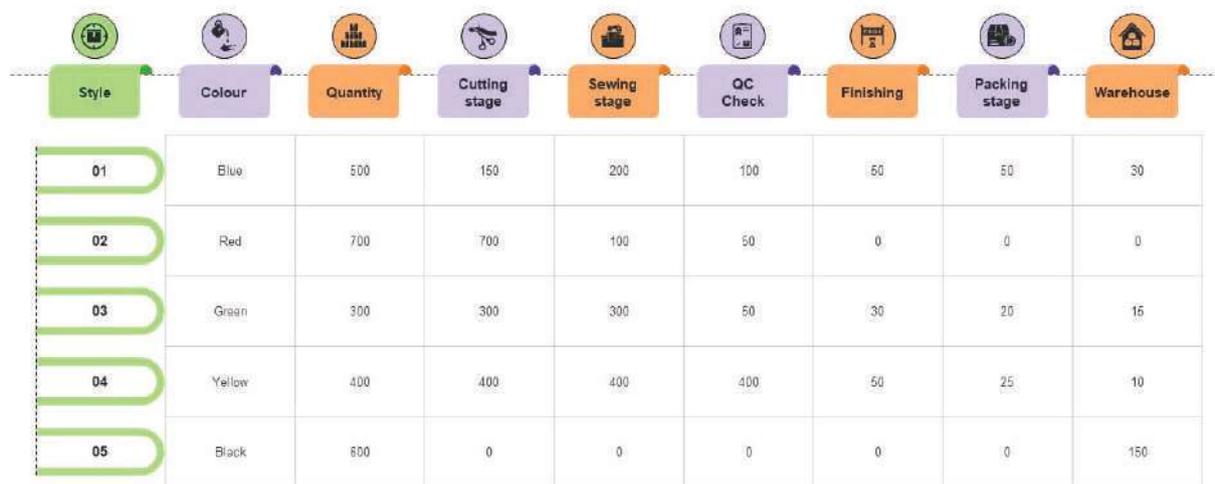


Fig. 2.1.3: Quality management system sample template for apparels, and home-furnishings

• **Coordinating Team for Sample Development**

Assistant designers serve as the communication bridge between design, sampling, production, and quality control teams. They handle daily updates, resolve technical issues, and log feedback for each version of the sample through formats like Sample Review Sheets and Style Tracker Logs. Adhering to Standard Operating Procedures (SOPs) as outlined by Ministry of Textiles’ Integrated Skill Development Scheme (ISDS) helps streamline collaboration and maintain sample integrity throughout the development cycle.



Fig. 2.1.4: SOP preparation format

2.1.2 Creating Samples Using Revised Techpack

A tech pack, short for technical package, is a comprehensive blueprint for product creation, especially in the apparel and home furnishing industries. It details every specification, from design sketches and measurements to fabric types, construction instructions, and packaging information, acting as a crucial communication tool between designers and manufacturers. The following are the components of a Techpack:

Component	Definition
Design Sketches	Visual representations (flats or 3D) showing front, back, and side views of the product, detailing silhouette, style lines, and garment elements.
Bill of Materials (BOM)	A comprehensive list of all raw materials needed to create the product, including fabrics, trims, threads, labels, and packaging items.
Measurement Specifications	A chart that provides detailed body or product measurements across sizes, with tolerance levels to ensure consistency during production.
Construction Details	Descriptions and diagrams outlining stitching types, seam placements, finishing techniques, and construction methods used in manufacturing.
Colour/Artwork Information	Information about colourways, Pantone codes, print placement, and embroidery designs, and artwork files with scale and positioning instructions.

Table 2.1.4: Parts of a techpack

Creating samples from a revised Techpack involves accurately translating updated buyer inputs into functional, customer-focused prototypes. Assistant designers ensure all revisions are implemented precisely, design changes are logically assessed, and customer preferences are prioritised—while following organisational standards. This approach minimises errors, speeds approvals, and ensures production-ready outcomes.

- **Applying Buyer Modifications Accurately**

Revised Techpacks may include updates in fabric, trims, seam types, labels, sizing, or fit. Designers must compare revisions with original specs and mark all changes clearly. Tools like Adobe Illustrator, PLM systems, and Techpack trackers assist in managing updates. Proper implementation ensures buyer satisfaction and prevents sample rejection. Referencing AMHSSC and Ministry of Textiles guidelines supports best practices in modification tracking. This step mainly uses the Bill of Materials (BOM), Construction Details, and Measurement Specifications sections of the Techpack.

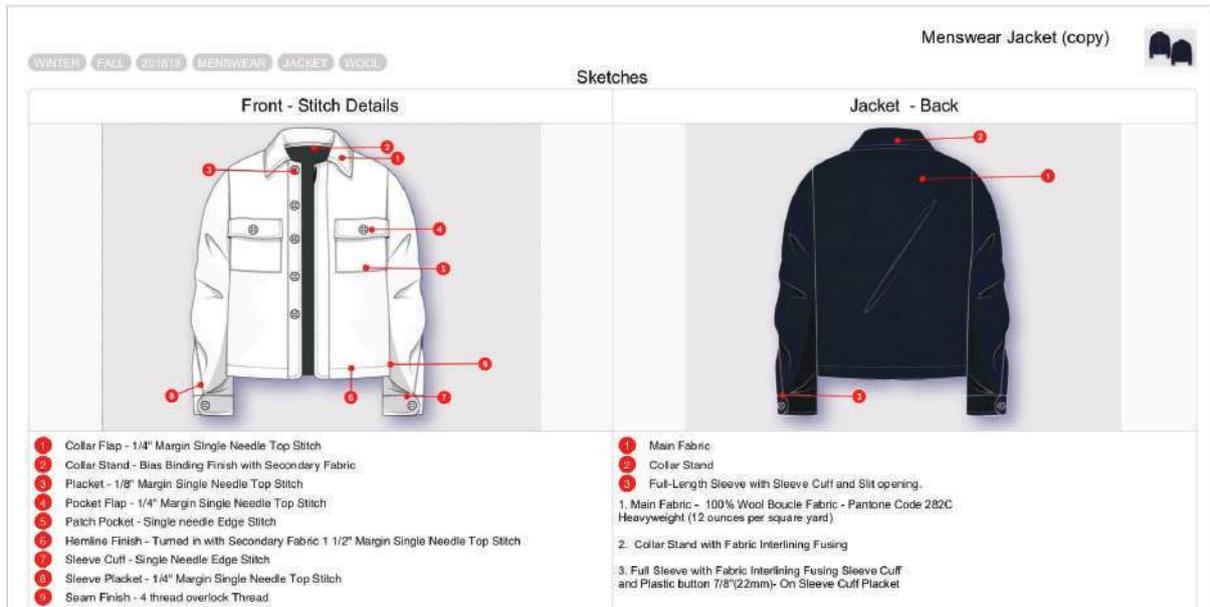


Fig. 2.1.5: Techpack comparison sheet

- **Making Sample Decisions Customer-Centric**

Sample decisions must reflect end-user comfort, usability, and aesthetic preferences. Assistant designers use buyer feedback, trend forecasts, and prior reviews to guide choices in materials, closures, and finishes. Tools like evaluation checklists and feedback logs help align samples with customer expectations and improve market fit. This step primarily refers to the Colour/Artwork Information, Design Sketches, and BOM sections of the Techpack.

5S Checklist					
5S Inspection			Rank A: perfect score Rank B: 1 -> 2 problems found Rank C: 3 or more problems observed		
Category	Item	Evaluation			Comments
		A	B	C	
Sort <i>Distinguish between what is needed and not needed</i>	Have all unnecessary items been removed?				
	Are all remaining items neatly arranged?				
	Are walkways and work areas clearly outlined?				
	Are unneeded items stored in an appropriate place?				
Storage <i>A place for everything and everything in its place</i>	Is there a visually marked, specified place for everything?				
	Is everything in its specified place?				
	Is it easy to see what needs to be where?				
	Are things put away after use?				
Shine <i>Cleaning and looking for ways to keep it clean</i>	Are work areas clean?				
	Is equipment kept clean?				
	Are cleaning materials easily accessible?				

Fig. 2.1.6: Sample evaluation checklist

2.1.3 Product Manufacturing Process for Samples

The product manufacturing process for samples serves as a trial run before mass production, ensuring that the design is feasible, cost-effective, and market-ready. Assistant designers play a key role in refining workflows, introducing improvements, and facilitating clear communication with production teams. This phase helps detect issues early and align the product with both technical and customer expectations.

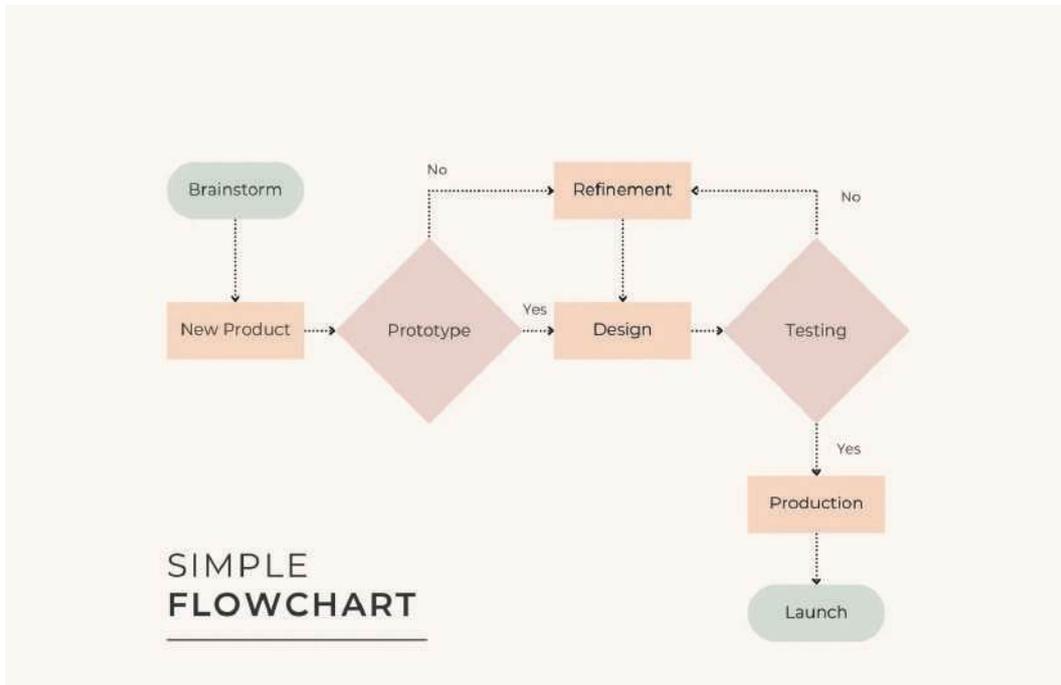


Fig. 2.1.9: Product manufacturing plan sample template

- **Assessing Sample Development Workflow**

Assistant designers review each production step—from material sourcing to final finishing—using workflow charts, T&A calendars, and planning tools to ensure efficiency. This stage draws on the Techpacks BOM and Construction Details for process accuracy.

- **Innovating for Easier Manufacturing Process**

Designers explore simplified stitching methods, reduced pattern complexity, or automated techniques to enhance manufacturability and reduce errors. This stage references Construction Details and Design Sketches to test production-friendly alternatives.

- **Analysing Samples with Market Forecast**

Samples are compared with market trends, price points, and buyer expectations to ensure commercial relevance and appeal. This stage uses Colour/Artwork Information, BOM, and Design Sketches to align with forecasted demand.

- **Using Vernacular in Sample Communication**

Translating technical terms into local languages helps production teams understand instructions clearly and execute them accurately. This supports better use of Measurement Specifications and Construction Details at the floor level.

Sub-process	Checklist Item	Suggested Visual Tool
Assessing Sample Development Workflow	✓ Track progress of each stage: cutting, stitching, QC, finishing	T&A Calendar Template or Sample Production Flowchart

Sub-process	Checklist Item	Suggested Visual Tool
Innovating for Easier Manufacturing	✓ Test simplified stitching and construction methods	Image showing Pattern Simplification or Stitch Type Comparisons
Analysing Samples with Market Forecast	✓ Align sample design with market trends and buyer expectations	Trend board or Market Forecast Chart
Using Vernacular in Sample Communication	✓ Translate instructions for floor staff using local language visuals	Bilingual Instruction Card or Annotated Sketch with Local Language Notes
Using Professional Communication Tools	✓ Log and share updates through structured digital tools	Screenshot of Sample Tracker (Excel) or PLM Communication Dashboard

Table 2.1.5: Sample development tracking tools

- **Using Professional Communication Tools**

Structured tools like Excel sheets, digital trackers, and sample logs help streamline updates and approvals across teams. This ensures smooth coordination by integrating all Techpack components effectively.

2.1.4 Proto Development Documentation and Specs

Proto development documentation is a vital part of the sampling process. It ensures all design details, changes, and feedback are accurately captured for internal review and external communication. A prototype, or “proto,” is the first sample made from initial tech pack specifications. Proper documentation of this stage helps track progress, resolve discrepancies, and ensure that design intent is preserved throughout development. Assistant designers play a key role in organising these records clearly and updating them as changes occur. This helps avoid confusion, supports decision-making, and facilitates smooth approvals from buyers and internal teams.

- **Documenting Sample Specifications Clearly**

Sample specifications include original details like fabric content, garment measurements, stitching techniques, and trims. Assistant designers must record these in organised formats—using tools like spec sheets, PLM software, and sample logs. Clarity and consistency are key to avoiding misinterpretation. Following guidelines from the Ministry of Textiles or ISDS ensures uniform terminology and format standards. This documentation primarily draws from the Measurement Specifications, Construction Details, and Bill of Materials (BOM) sections of the Techpack.

- **Recording Sample Modifications for Review**

As protos evolve, changes must be recorded accurately. These may include sizing corrections, seam reinforcements, or aesthetic updates based on buyer feedback. Designers use Sample Revision Logs, CAD tools, and annotated images to maintain a clear trail of all adjustments. Documenting these modifications supports quality control, improves future samples, and ensures traceability. This step refers to the Revision History, Sample Approval Sheets, and annotated Design Sketches within the Techpack.

Type of Document	Apparel	Home Furnishing	Made-ups
Proto Spec Sheet	Includes garment measurements, fabric, and trims.	Includes fabric specs, finishing, and dimensions.	Covers size, material specs, and product features.
Design Sketch with Callouts	Illustrates garment construction details.	Shows design patterns, placement, and trims.	Shows stitching layout, openings, and label position.
Sample Revision Log	Tracks changes in fit, seams, or fabric types.	Records modifications in weaving, dyeing, or prints.	Logs changes in stitching method, closures, etc.
Fit Feedback Sheet	Records wearer trial observations and corrections.	Not commonly used; aesthetic placement feedback.	Documents dimensional checks and folding feedback.
BOM (Bill of Materials)	Lists fabric, trims, labels, buttons, thread, etc.	Lists fabric, prints, fillers, accessories.	Includes cloth type, cords, elastic, zippers, etc.
Construction Detail Sheet	Describes stitching types and seam allowances.	Details seam finishes and piping techniques.	Lists hemming types, reinforcements, and finishing.
Sample Approval Sheet	Buyer sign-off document post proto review.	Buyer/stakeholder approval for décor and dimensions.	Approval of packaging, functional checks, and look.
Visual Quality Checklist	Checks colour match, label position, and finish.	Focuses on print alignment, colour accuracy, finish.	Focuses on fold quality, print, seams, and accessories.

Table 2.1.6: Types of proto development documents in apparel, home furnishing, and made-ups

2.1.5 Constructing Samples as per Techpack

Constructing samples based on the tech pack is the practical step of translating digital design into a physical form. This involves interpreting technical data into pattern cutting, fabric handling, sewing, and finishing. Assistant designers ensure that production teams understand all specifications, support them in resolving issues, and confirm that both function and aesthetics are accurately represented. A well-constructed sample reflects the brand's quality and helps secure buyer approvals.

- **Evaluating Functional and Aesthetic Samples**

Samples must be evaluated for both performance and appearance. Functional evaluation checks for comfort, fit, strength, and durability—ensuring the product performs well in real-life use. Aesthetic evaluation focuses on style, colour accuracy, design details, and overall appeal. Designers use checklists, feedback forms, and trial fittings for assessment. Referencing Design Sketches, Colour/Artwork Information, and Measurement Specs in the Techpack ensures both aspects are well-balanced. Feedback from these evaluations helps finalise the sample for bulk production.

Evaluation Area	Key Checks	Techpack Reference	Status (✓/✗/↘)	Remarks/ Comments
1. Fit & Measurement	Size accuracy, ease of movement	Measurement Specs		
2. Construction Quality	Seam strength, stitching type, finishing	Construction Details		
3. Fabric & Trims	Fabric feel, trim placement, label and zip functionality	BOM, Construction Details		
4. Colour & Design	Colour match, print clarity, design accuracy	Design Sketches, Colour/Artwork Info		

Table 2.1.7: Functional and aesthetic sample evaluation checklist

UNIT 2.2: Techpack, Costing, and Pattern Making

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe the process of developing fit samples based on design specifications.
2. Elaborate on the steps to create proto and fit samples as per the revised Techpack for a specific style.
3. Elucidate the key stages of the product manufacturing process relevant to sample development.
4. Outline the required documentation and specifications at each stage of proto sample development.
5. Construct proto and fit samples accurately by following the Techpack and correct assembly sequence.

2.2.1 Fit Sample Development Process Steps

The fit sample development process ensures that garments not only look correct but also fit and function as intended. It follows the proto stage and focuses on aligning the product with measurement accuracy, customer comfort, and brand standards. Assistant designers collaborate with pattern makers and sampling teams to refine garment construction based on feedback. Well-developed fit samples help minimise production errors and improve customer satisfaction. The following are the stages of fit sample development:

- **Developing Proto and Fit Samples**

Proto samples are the first physical version based on the tech pack. Once reviewed, fit samples are developed with refined specs to test size, structure, and comfort. Assistant designers refer to Measurement Specs, Construction Details, and Design Sketches while coordinating sample creation. Tools like fit mannequins and trial reports help assess accuracy.

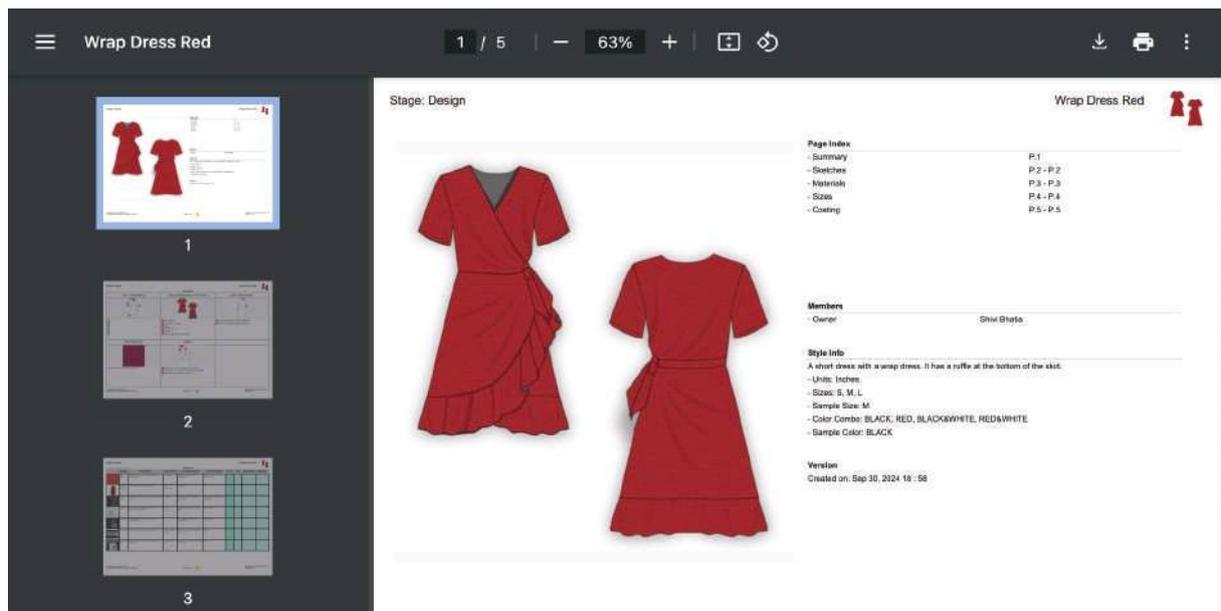


Fig. 2.2.1: Sample product design sketch

• **Evaluating Functional and Aesthetic Samples**

Fit samples are checked for both wearability and appearance. Functional checks include comfort, movement, and seam durability, while aesthetic checks focus on style, colour accuracy, and detail placement. Designers use Fit Evaluation Sheets and visual checklists. Key references include Colour/ Artwork Info, Design Sketches, and Measurement Specs.

SAMPLE SIZE: Full			TECHNICAL FLAT SKETCHES	
POINT OF MEASURE	TOL +/-	1st REQ	FRONT	
1. Front Length (from HPS)	1/2	28 3/4"		
2. Chest Width (1" below armhole)	1/4	14"		
3. Across Shoulder (seam to seam)	1/4	13 1/2"		
4. Shoulder Width (HPS to armhole)	1/4	2"		
5. Across Chest (middle of armhole)	1/4	12"		
6. Across Back (middle of armhole)	1/4	13"		
7. Bottom Trim Height	1/8	1/2"		
8. Sweep (above rib trim)	1/4			
9. Sleeve Length (from top of armhole)	3/8			
10. Armhole (straight)	1/4	7"		
11. Muscle Width (1" below armhole)	1/4			
12. Elbow Width (9" from sleeve opening)	1/4			
13. Sleeve Opening Width (above trim)	1/8			
14. Cuff Height	1/8	1/4"		
15. Neck Drop Front (HPS to seam)	1/8	6 3/4"		
16. Neck Drop Back (HPS to seam)	1/8	3 3/4"		
17. Neck Width (seam to seam)	1/4	4 3/4"		
18. Collar/Neck Trim Height (at center back)	1/8	1/2"		
19. Shoulder Slope	1/8	1/2"		
20. Leg Opening	1/2	9 1/4"		
21. Inseam Length	1/2	3 1/4"		
			BACK	

Fig. 2.2.2: Measurement spec sheet

• **Making Sample Decisions Customer-Centric**

Decisions are based on user needs, buyer feedback, and trend insights. Assistant designers adjust elements like fit, closures, or trims to enhance comfort and appeal. Tools such as Revision Logs, Customer Feedback Forms, and Sample Approval Sheets ensure changes are aligned with expectations. References include BOM, Design Sketches, and updated tech pack sections.

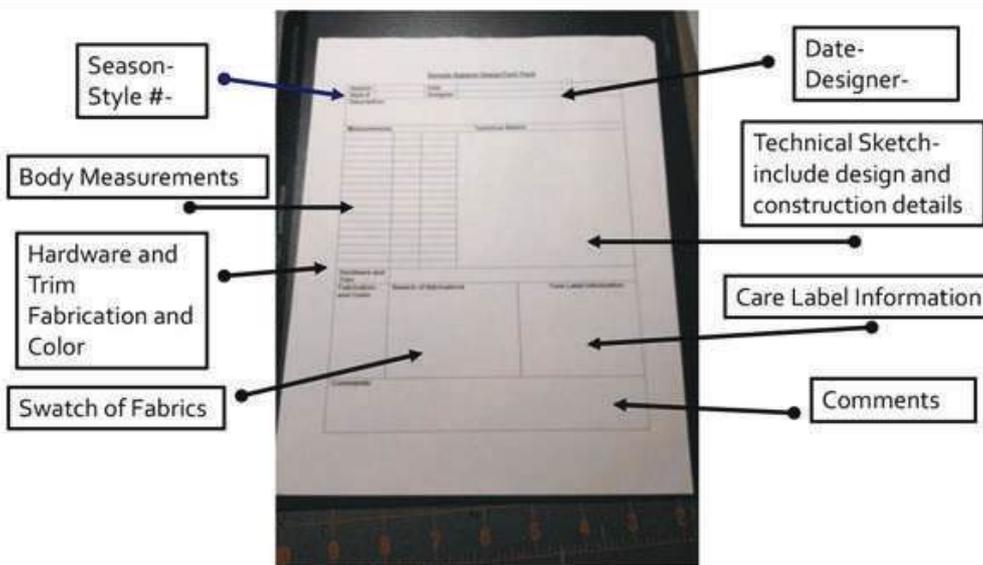


Fig. 2.2.3: Sample revision page

2.2.2 Proto Sample Creation Using Techpack

Proto sample creation is the first physical step in converting a design concept into a tangible product using the Techpack. It focuses on interpreting specifications, applying buyer feedback, and aligning with brand and production standards. Assistant designers ensure all details are followed precisely to reduce errors in later sampling stages.

- **Applying Buyer Modifications Accurately**

Proto samples must reflect all updates from buyer comments—whether it's in fabric choice, trims, sizing, or construction. Designers compare revisions with original specs using tools like CAD, PLM, and Techpack trackers. References include the BOM, Measurement Specs, and Construction Details sections of the Techpack.

- **Following Organisational Decision Guidelines**

Sample creation must follow SOPs, workflows, and approval hierarchies within the organisation. Tools like Sample Approval Sheets and Revision Logs ensure traceability and internal compliance. This step ensures consistent execution using all sections of the Techpack.

FABRIC SWATCH		SKETCH				
						
BILL OF MATERIALS						
#	ITEM	DESCRIPTION	COLOR	CODE	QTY	SUPPLIER
A	MAIN FABRIC	LIGHTLY WAXED COTTON TWILL, 100% COTTON, 160 GSM	OLIVE			FTY SOURCE
B	TRIM	CORDUROY, 100% COTTON, 150 GSM	BROWN			FTY SOURCE
C	SLEEVE LINING	POLYESTER LINING, 100% POLYESTER, 95 GSM	OLIVE			FTY SOURCE
D	INTERFACING	STABILIZER, 100% POLYESTER, MID WEIGHT	N/A			FTY SOURCE
E	ZIP	YKK, METAL, #8, 2-WAY OPEN ENDED, 21 1/2" LONG	ANTIQUE GOLD	MGKMB	1	YKK, FTY SOURCE
F	SNAPS	S-SPRING SNAP, METAL, CLOSED TOP, FLAT HEAD, 27L, 16.8MM	ANTIQUE GOLD		13	FTY SOURCE
G	EYELETS	EYELET & WASHER, METAL, 9.5 X 5MM	ANTIQUE GOLD		6	FTY SOURCE
H	VELCRO	VELCRO, 3/4" W X 3/8" H	BLACK		1	FTY SOURCE
I	BRAND LABEL	WOVEN DAMASK LABEL, HOT CUT, 3" W X 3" H	BLACK [WHITE TEXT]		1	FTY SOURCE
J	SIZE PIP	WOVEN DAMASK LABELS, CENTER FOLD, 10MM W X 40MM H [BEFORE FOLD]	BLACK [WHITE TEXT]		1	FTY SOURCE
K	CARE LABEL	CARE LABEL, WOVEN SATIN, PLEASE USE STOCK LABEL	BLACK		1	FTY SOURCE
L	THREAD	THREAD, T-60 SPUN POLY, 100% POLYESTER	OLIVE			FTY SOURCE
M	LINING THREAD	THREAD, T-40 SPUN POLY, 100% POLYESTER	YELLOW			FTY SOURCE
N	POLYBAG	POLYPROPYLENE, SEE PAGE 8	CLEAR		1	FTY SOURCE

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Fig. 2.2.4: Proto Sample creation using techpack

2.2.3 Stages in Product Manufacturing Process

The manufacturing process transforms an approved sample into a production-ready product. Each stage—from planning to finish—must balance efficiency, quality, and market demands. Assistant designers contribute by improving methods, aligning production with trends, and supporting clear team communication.

- **Innovating for Easier Manufacturing Process**

Designers explore simpler stitching methods, fewer components, or automation to ease production. Innovations are tested using Construction Details and Design Sketches for feasibility. The aim is to reduce time, cost, and production errors.

- **Analysing Samples with Market Forecast**

Samples are assessed against market data, price points, and fashion trends to ensure commercial success. Assistant designers use buyer mood boards, trend forecasts, and BOMs for alignment. This helps refine product features for current demand.

- **Using Vernacular in Sample Communication**

Communicating in local language ensures production staff understand instructions clearly. Translating key terms from Measurement Specs and Construction Details avoids misinterpretation on the shop floor. This improves execution accuracy.

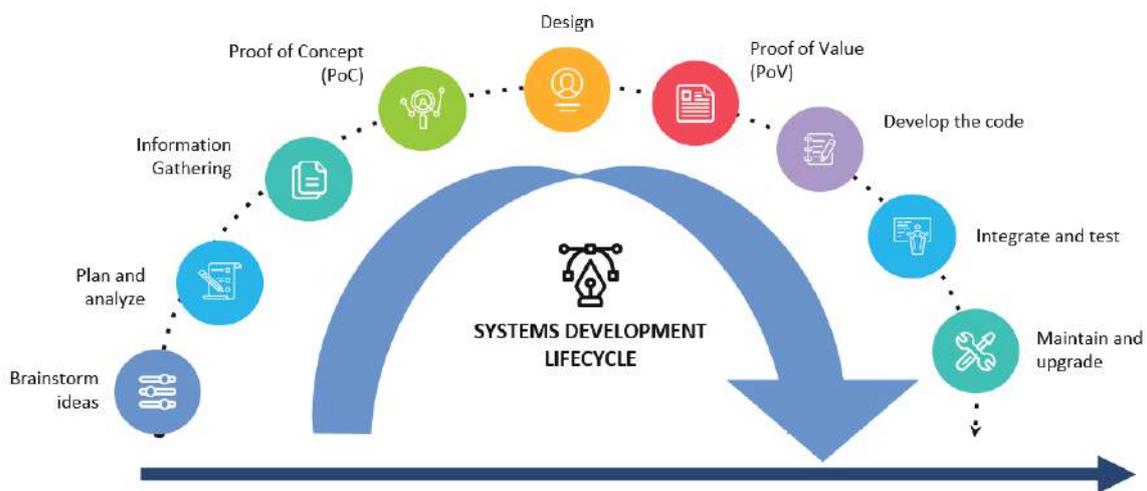


Fig. 2.2.5: Product development lifecycle

2.2.4 Documentation for Proto Sample Development

Documentation in proto development helps track every specification and revision, ensuring transparency and accountability. Assistant designers must record all technical inputs clearly and update changes consistently to support decision-making.

- **Documenting Sample Specifications Clearly**

Specifications such as fabric, measurements, seam type, and trims must be captured in structured formats. Designers use spec sheets, sample logs, and PLM systems for clarity. These refer to the BOM and Measurement Specs.

Tool/ Document Used	Specification Component	Techpack Reference	Purpose	Status (Checked/ Update Needed)
Spec Sheet	Fabric type, trims, measurements	BOM, Measurement Specs	To record all initial product specifications	
Sample Development Log	Version updates, sample changes	Revision History, Measurement Specs	To track all changes made to fit samples	

Tool/ Document Used	Specification Component	Techpack Reference	Purpose	Status (Checked/ Update Needed)
PLM System Entry	Seam type, closure details, POMs	Construction Details, BOM	To digitally store and manage structured specs	
BOM (Bill of Materials)	Material breakdown, trims list	Core BOM Section	To ensure all components are documented	
Measurement Spec Sheet	Size chart, POMs, tolerances	Measurement Specs	To guide accurate garment construction	

Table 2.2.1: Specification tracking checklist for fit sample development

- **Recording Sample Modifications for Review**

Every change—fit adjustment, fabric update, or label move—must be logged for review. Tools like Revision Logs and annotated sketches help maintain version history. This ensures traceability and supports approval stages.

Change Log Template

In order to ensure that changes are managed correctly—and that the impact of those changes is fully assessed—it is important to maintain an accurate tracking log. This template provides a simple way of tracking each of the steps required to fully process a change into a project.

ID	Description	Requestor	Analysis Complete	Recommendation	Change Board Decision	Plans Updated	Requestor Advised	PM Signoff
			Click here to enter a date	Choose an item	Choose an item	Click here to enter a date	Click here to enter a date	Click here to enter a date

Fig. 2.2.2: Revision log for fit sample development

2.2.5 Accurate Sample Construction from Techpack

Accurate sample construction ensures the product matches technical and aesthetic expectations. Assistant designers translate Techpack data into precise instructions for pattern cutting, sewing, and assembly.

- **Evaluating Design Inputs Logically**

Each design input—fabric type, seam style, closure—is assessed for feasibility and visual appeal. Tools like CAD software, costing tools, and drape simulators assist in evaluation. Key references include Design Sketches and Construction Details.

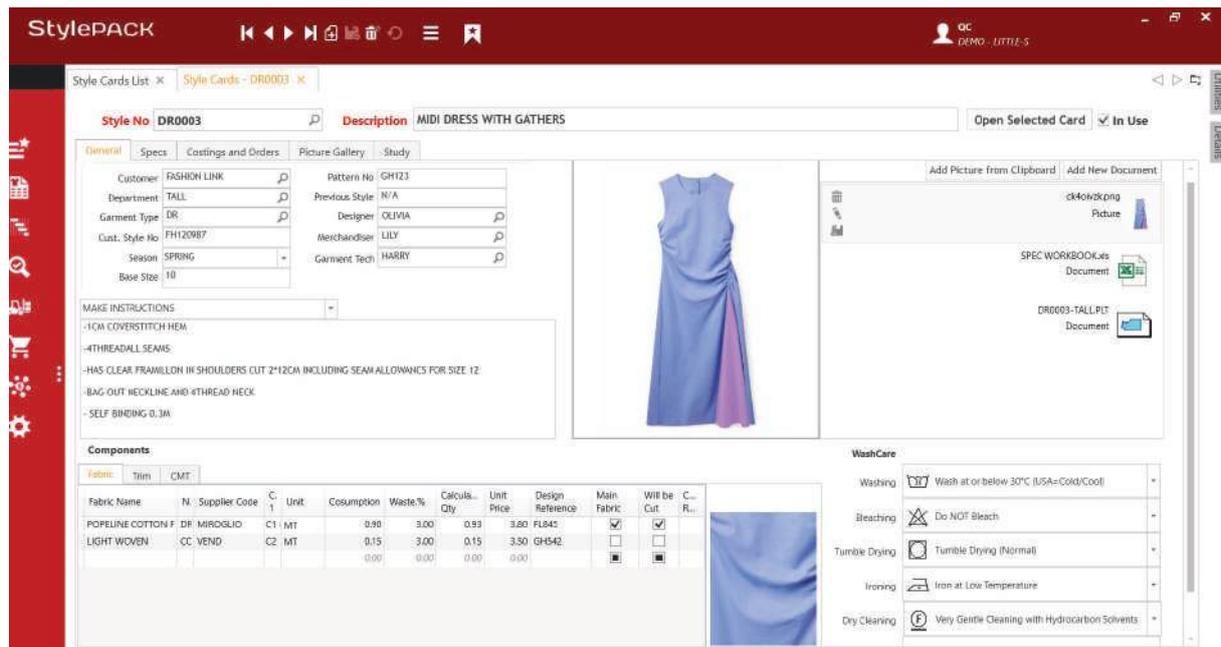


Fig. 2.2.3: PLM software page with bill of materials reference

- **Constructing Samples as per Techpack**

Production teams build samples exactly as defined in the Techpack. Assistant designers ensure clear interpretation of BOM, Measurement Specs, and Construction Details. The result is a sample ready for review and mass production planning.

Summary

- Fit samples are developed to match design and quality requirements.
- Team roles must be assigned clearly in sample development.
- Customer needs should be considered during sample making.
- Sample development should be planned and organised well.
- Coordination among team members is important for fit samples.
- Buyer changes must be applied correctly in samples.
- Sample decisions should focus on customer satisfaction.
- Design inputs must be evaluated logically before sample creation.
- Manufacturing steps must be understood to support sample making.
- Sample documentation and records must be maintained carefully.
- Sample specifications and changes must be recorded at each stage.
- Samples must be constructed following Techpack instructions accurately.

Exercise

Multiple-choice Question:

1. What is an important step before starting fit sample development?
 - a. Ignoring design instructions
 - b. Assigning development team roles
 - c. Skipping quality checks
 - d. Avoiding planning sessions
2. Why is a Techpack used in sample development?
 - a. For rough idea only
 - b. To delay the process
 - c. To guide accurate construction
 - d. To skip buyer approval
3. Which skill is essential for better team coordination?
 - a. Ignoring others
 - b. Avoiding communication
 - c. Professional communication tools
 - d. Working alone
4. What should be done when the buyer gives modifications?
 - a. Avoid applying them
 - b. Apply them inaccurately
 - c. Apply them carefully in samples
 - d. Replace the Techpack entirely
5. What should be recorded during proto sample development?
 - a. Buyer complaints only
 - b. Only costing details
 - c. Sample changes and specifications
 - d. Delivery address only

Descriptive Questions:

1. Describe the steps for developing fit samples.
2. What is the purpose of using a Techpack in samples?
3. How do you apply buyer changes in the sample process?
4. What records are needed during proto sample development?
5. How should samples be constructed using the Techpack?

3. Evaluate the Proto Sample Developed Related to Specific Product Class



Unit 3.1 - Design and Sample Review Process



Key Learning Outcomes



By the end of this module, the participants will be able to:

1. Describe the design development steps including planning, research, and concept creation.
2. Describe how to evaluate designs and apply corrections from feedback.
3. Check proto samples for fit, design, washability, and client or Techpack instructions.
4. Identify improvement areas in proto/fit samples and make changes.
5. Describe how to prepare sample files with swatches, accessories, Techpack, and cost sheet.

UNIT 3.1: Design and Sample Review Process

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe the design process, including planning, research, and concept development.
2. Describe how to assess and refine a design based on feedback.
3. Check proto samples against design, function, and Techpack details.
4. Identify flaws in proto/fit samples for correction.
5. Describe how to compile approved sample documents and materials.

3.1.1 Design Process Planning and Development

Design Process Planning and Development involves outlining the systematic steps a project will take from initial concept to final execution, ensuring a structured and efficient approach. The Assistant Designer plays a vital support role across apparel, makeup, and home furnishings, actively contributing to both the design process by conducting research, developing concepts, and creating precise tech packs. During sample review, they meticulously inspect samples for accuracy, quality, and adherence to design specifications, documenting all feedback. This iterative process of detailed evaluation and clear communication with manufacturers is crucial for refining products until they meet approval for production.



Fig. 3.1.1: Labelled work zones

- **Understanding Design Planning and Research**

Design planning starts by understanding customer needs, market trends, and product feasibility. The process includes researching similar products, conducting client meetings, and preparing a design brief. Tools like mood boards, competitor analysis, and design requirement sheets help clarify the scope, resulting in a well-defined plan for design development.

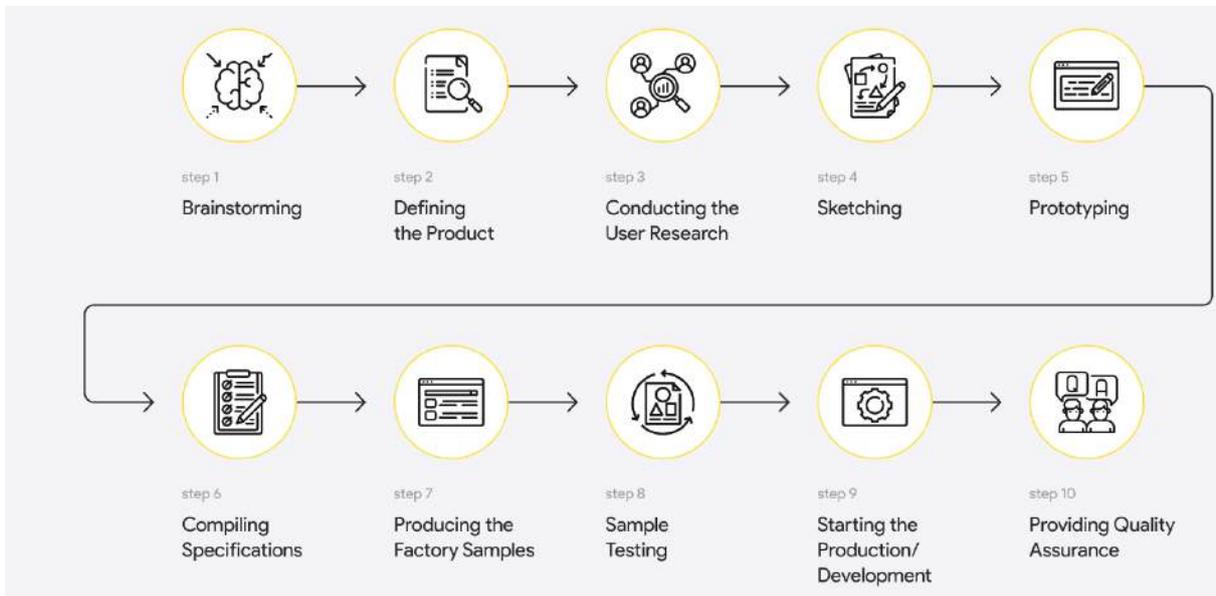


Fig. 3.1.2: Design planning workflow for research

- **Following Proto Evaluation Organisation Protocol**

This involves reviewing prototypes using a structured method to ensure quality, fit, and functionality. Teams follow protocols using sample review checklists, buyer guidelines, and Techpack details. It leads to consistent evaluation and quick decision-making on prototype approval or improvement.

1. Key Responsibilities Overview

Task	Completion Status
Comprehensive summary of primary duties and areas of responsibility.	<input type="checkbox"/>
Detailed status report of all ongoing tasks, including timelines and next steps.	<input type="checkbox"/>
Documentation of critical milestones and project dependencies.	<input type="checkbox"/>
Overview of strategic objectives aligned with organizational goals.	<input type="checkbox"/>

2. Contacts and Stakeholders

Fig. 3.1.3: Proto evaluation organisation protocol sample template

- **Monitoring Progress and Maintaining Documentation**

Tracking progress involves regular status updates, review meetings, and proper documentation of changes. Project timelines, daily logs, and tracking sheets are used throughout the process. This ensures smooth workflow, accountability, and easy access to past records.

Project Tracker Template

				Projects			Deliverable(s)		Cost / Hours		
At Risk	Status	Priority	Deadline	Title	Description	Assigned To	Deliverable	% Completed	Fixed Cost	Estimated Hours	Actual Hours
Project Name											
<input type="checkbox"/>	Completed	High		Task 1				100%			
<input type="checkbox"/>	In Progress	High		Task 2				80%			
<input type="checkbox"/>	Overdue	High		Task 3				30%			
<input type="checkbox"/>	Not Started	Medium		Task 4				0%			
<input type="checkbox"/>	On Hold	Low		Task 5				10%			
Project Name											
<input type="checkbox"/>				Task 1							
<input type="checkbox"/>				Task 2							
<input type="checkbox"/>				Task 3							
<input type="checkbox"/>				Task 4							
Project Name											
<input type="checkbox"/>				Task 1							
<input type="checkbox"/>				Task 2							
<input type="checkbox"/>				Task 3							
<input type="checkbox"/>				Task 4							
<input type="checkbox"/>				Task 5							

Fig. 3.1.4: Project tracker template

- **Ensuring Compliance with Design Standards**

Designs are checked for adherence to brand, industry, and buyer standards throughout the development process. Designers use standard manuals, quality checklists, and measurement charts to validate compliance. This results in reduced rework, uniform quality, and customer satisfaction.

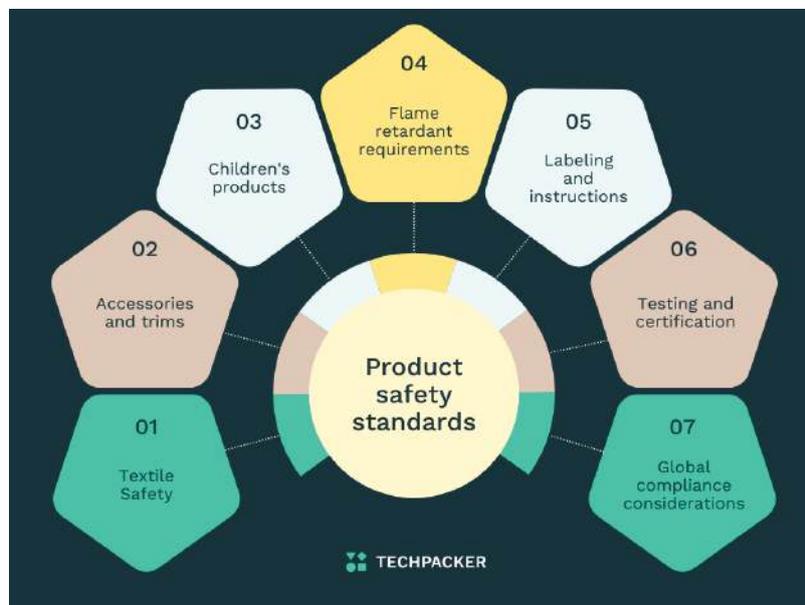


Fig. 3.1.5: Design standards template

- **Sequencing Work after Design Changes**

When design changes occur, tasks are rearranged in the correct order to maintain continuity in the workflow. The team updates production schedules, sample timelines, and design documents accordingly. This helps maintain coordination and avoid delay or duplication.

Event Timeline Slide Template



Fig. 3.1.6: Sample timeline sample template

- **Providing Direct Design Problem Solutions**

Design issues are resolved by identifying the cause and finding direct solutions through team discussions or design revision. Designers use troubleshooting charts, mock-ups, or pattern changes to resolve issues quickly. This approach ensures minimal disruption and efficient correction.

DESIGN ISSUE RESOLUTION – ACTION LOG

ISSUE NUMBER:

ISSUE LOG:

RESOLUTION ITEM:

DATE	ISSUE IDENTIFIED WITH	RESOLVED BY	DESCRIPTION OF ISSUE	DESCRIPTION OF CHANGE/RESOLUTION	APPROVAL STAGE
------	-----------------------	-------------	----------------------	----------------------------------	----------------

TOOLS USED:

- ✓ Troubleshooting Charts
- ✓ Mock-ups
- ✓ Pattern Changes
- ✓ Design Review Notes

NOTES:

(Add observations, additional suggestions, or comments)

REMARKS:

(Specify any pending issues or clarifications needed)

UNDERSIGNED:

(Name and designation of person approving the resolution)

Fig. 3.1.7: Sample problem solution template

- **Innovating Evaluation Process for Efficiency**

Innovations like using 3D sampling, digital reviews, and AI-based design evaluation speed up the evaluation process. Teams test these new methods alongside traditional ones using simulation tools and virtual approval platforms. The outcome is reduced cost, faster sample approval, and improved collaboration.



Fig. 3.1.8: Concept of digital parameters for apparel industry

- **Assessing Design Inputs and Outputs**

Inputs like fabric types, trims, and Techpack specifications are assessed alongside outputs such as proto or fit samples. Comparison tools like input-output checklists and sample review sheets help in this process. This ensures the final product matches the original design plan and expectations.

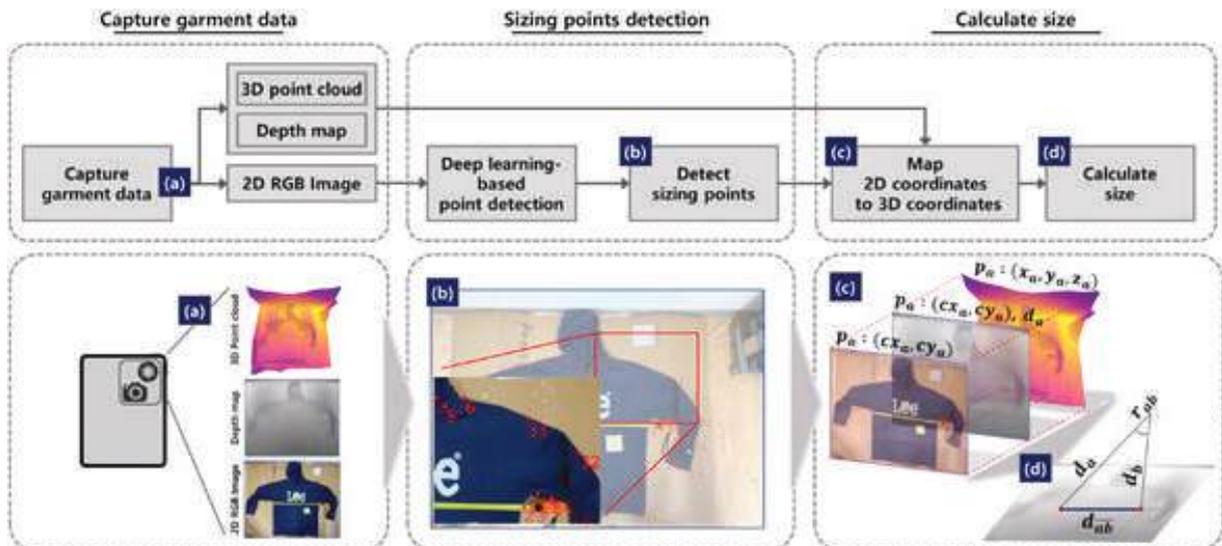


Fig. 3.1.9: Automation in design measurements

- **Analysing Errors in Design Process**

Errors are traced by reviewing rejected samples, client feedback, and deviations from the Techpack. Designers use error analysis forms, version histories, and revision logs to identify where the mistake occurred. Fixing these errors early prevents quality issues and improves the design workflow.

3.1.2 Refining Designs Using Constructive Feedback

Refining Designs Using Constructive Feedback is an iterative and critical phase where initial concepts and prototypes are meticulously improved based on analytical input, ensuring the final product meets desired standards. This process involves a systematic review of samples and designs against predetermined criteria, identifying areas for enhancement in aesthetics, functionality, and manufacturability. The Assistant Designer plays a crucial role in this refinement loop, diligently incorporating feedback from fit sessions, stakeholder reviews, and quality control checks into revised design specifications. This involves updating technical packs, adjusting material selections, and communicating precise modifications to manufacturers to achieve optimal product realisation.

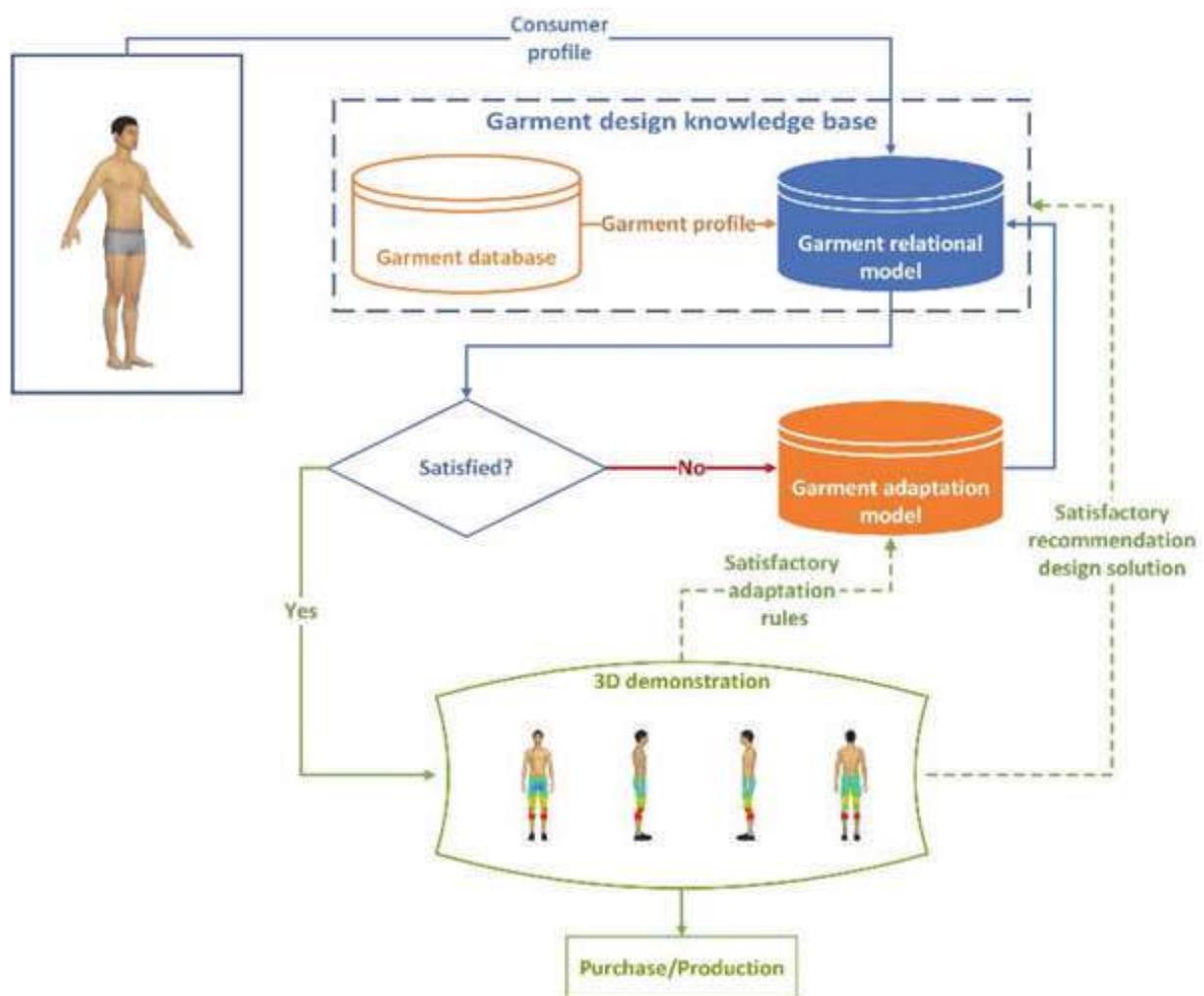


Fig. 3.1.10: Constructive feedback loop

- **Reviewing Sample with Client Team**

This step involves presenting the prepared sample to the client or buyer team for review and feedback. The process includes organising meetings, sharing samples with Techpack references, and discussing details using review forms and sample notes. The outcome is a clear list of feedback points that guide the next revision.

- **Modifying Samples Based on Feedback**

After collecting feedback, necessary changes are made to the design, measurements, or construction of the sample. Designers update the Techpack, modify patterns, and create revised samples using sample correction sheets. This results in an improved sample that meets the client's expectations more closely.

- **Making Sensible Design Review Decisions**

Design teams assess feedback to decide which changes are feasible based on design integrity, production capability, and cost. Using decision charts, cost sheets, and technical feasibility notes, they evaluate the impact of each suggestion. This helps maintain design quality while accommodating practical adjustments.

- **Justifying Unapplied Design Change Decisions**

If certain client suggestions cannot be implemented, a valid explanation is provided. Designers document the reasons using design review reports, technical notes, and costing constraints. The outcome is mutual understanding and transparency in the decision-making process.

- **Evaluating Feedback for Design Process**

Feedback from various stages is reviewed to identify common issues or improvement areas in the design process. Tools like feedback logs, evaluation matrices, and review summaries are used for analysis. This continuous evaluation strengthens future design planning and reduces repeat errors.

CONSTRUCTIVE FEEDBACK – REVISION LOG (APPAREL / HOME FURNISHING / MADE-UPS)

FEEDBACK ENTRY NUMBER:

FEEDBACK SOURCE:

ITEM TYPE: Apparel / Home Furnishing / Made-Up

REVISION TYPE: Fit / Finish / Fabric / Print / Stitching / Packaging / Others

DATE	FEEDBACK FROM	REVISED BY	ITEM DESCRIPTION	FEEDBACK SUMMARY	ACTION/CHANGE TAKEN	APPROVAL STAGE
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TOOLS / REFERENCES USED:

- ✓ Buyer Comments Sheet
- ✓ Techpack / Spec Sheet
- ✓ Sample Photos / Mock-ups
- ✓ Fabric Swatches / Color Cards
- ✓ Stitching/Finishing Guides

NOTES:

(Detailed observations, clarification points, or buyer preferences)

REMARKS:

(Pending approvals, cost impact, or further review suggestions)

UNDERSIGNED:

(Name, Role – e.g., Designer / QA Lead / Buyer Representative)

Fig. 3.1.11: Feedback evaluation sample sheet

3.1.3 Checking Samples against Design Standards

Checking Samples against Design Standards is a crucial quality assurance step where physical prototypes are rigorously evaluated against the original design specifications, ensuring precision and adherence to established benchmarks. This systematic examination involves comparing every detail of the sample, from measurements and materials to construction and aesthetics, with the technical pack and design vision. The Assistant Designer is instrumental in this process, meticulously inspecting each sample for accuracy, identifying any discrepancies, and documenting deviations to facilitate necessary revisions and uphold the integrity of the final product.

- **Verifying Samples with Techpack Details**

This step ensures that the sample matches all specifications listed in the Techpack, such as measurements, stitching, trims, and finishes. Designers compare the actual sample with measurement charts, construction notes, and material details from the Techpack. The outcome is an accurate sample that reflects the intended design and reduces the chance of errors during production.

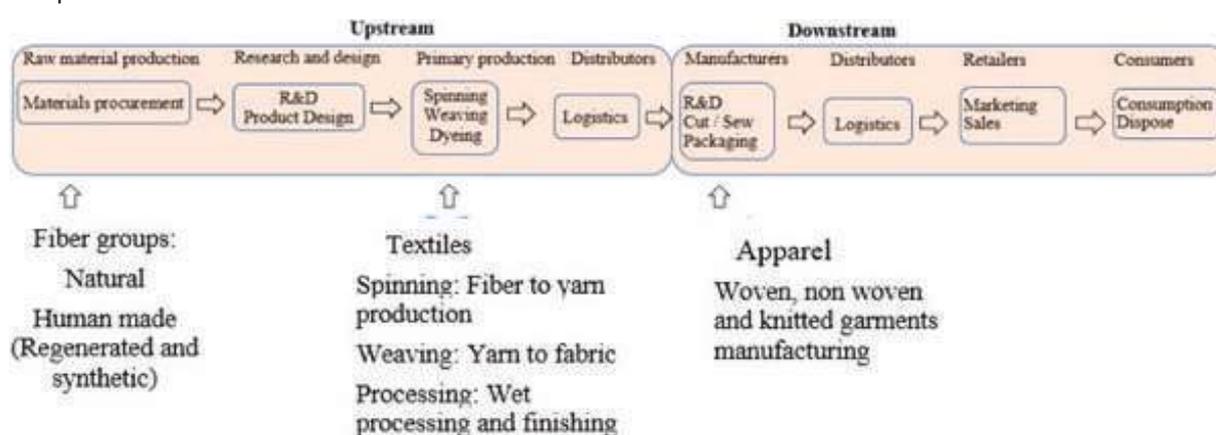


Fig. 3.1.12: Design parameters from techpack reference

- **Checking Sample Utility and Costing**

Samples are tested for practical use—comfort, strength, durability—and checked to ensure they meet the budget. Utility is assessed through trials or user testing, while cost is reviewed using cost sheets and buyer price limits. This ensures that the design is both functional and economically viable for production.

- **Reading Sample Instructions and Processes**

Designers review detailed instructions like stitching methods, finishing steps, and quality checks mentioned in the Techpack or SOPs. This process involves reading sample tags, sewing guidelines, and packaging instructions. It ensures the sample is made according to expected processes, reducing miscommunication in the production stage.

- **Understanding Changes in Proto Sample**

Any changes from the original design during proto development are carefully noted and analysed. Teams use version-controlled Techpacks, revision logs, and annotated samples to track modifications. This helps in understanding the evolution of the design and ensures all changes are approved before finalisation.

- **Matching Samples to Buyer Expectations**

Final samples are compared against buyer-provided references, comments, and approval standards. This involves using buyer expectation sheets, visual references, and approval checklists during the review. The outcome is a sample that aligns with the buyer's vision, improving approval chances and client satisfaction.

Checklist Item	Verified Status
Fabric type matches specification	<input type="checkbox"/>
Fabric colour matches approved shade	<input type="checkbox"/>
Stitching quality and consistency	<input type="checkbox"/>
Size and fit as per tech pack	<input type="checkbox"/>
Print/Embroidery matches design	<input type="checkbox"/>
Trims and accessories as specified	<input type="checkbox"/>
Label and tag placement correct	<input type="checkbox"/>
Wash care label included	<input type="checkbox"/>
Overall construction quality	<input type="checkbox"/>
Meets packaging requirements	<input type="checkbox"/>
Remarks if any	

Table. 3.1.1: Design apparel sample verification checklist sample

3.1.4 Identifying Flaws in Fit Samples

Identifying Flaws in Fit Samples is a critical analytical stage where initial garment prototypes are meticulously examined on a live model or mannequin to detect and document any constructional, proportional, or comfort issues. This process goes beyond mere measurements, focusing on how the garment drapes, moves, and conforms to the body, revealing areas that impede proper fit or aesthetic appeal. The Assistant Designer plays a pivotal role, keenly observing and pinpointing discrepancies such as pulling, gaping, twisting, or incorrect seam placement, meticulously noting each flaw to guide subsequent pattern adjustments and ensure the garment achieves its intended fit and silhouette.

- **Evaluating Flaws in Fit Samples**

This step involves checking how the sample fits on a mannequin or live model, identifying issues like tightness, poor alignment, or incorrect drape. Designers use body measurement charts, fit evaluation forms, and client fit comments to assess the sample. The outcome is a clear list of flaws that need correction to improve comfort and appearance.

- **Communicating Sample Changes with Team**

Once flaws are identified, the changes are discussed with pattern makers, tailors, and production teams to ensure everyone understands the revisions. Tools such as correction notes, marked-up samples, and visual diagrams are used in meetings or digital updates. This ensures that all team members are aligned and can implement the changes accurately.

- **Speaking Clearly in Appropriate Language**

During discussions, designers use simple, clear language and relevant design terminology to explain issues and corrections. This may involve bilingual instructions, visual references, or simplified terms to suit the audience. The result is better understanding among diverse team members and fewer mistakes in the next version of the sample.

Checklist Item	Verified
Fit matches approved sample/tech pack	<input type="checkbox"/>
Shoulder alignment is correct	<input type="checkbox"/>
Sleeve length and fit are accurate	<input type="checkbox"/>
Neckline shape and depth are as specified	<input type="checkbox"/>
Waist and hip measurements are correct	<input type="checkbox"/>
Garment does not pull or bunch when worn	<input type="checkbox"/>
Armhole size and comfort are appropriate	<input type="checkbox"/>
Ease of movement is satisfactory	<input type="checkbox"/>
Hemline is even and at correct length	<input type="checkbox"/>
Dart, pleat, and seam placements are accurate	<input type="checkbox"/>
Remarks if any	

Table. 3.1.2: Identifying flaws in fit samples – checklist

3.1.5 Compiling Approved Sample Documentation Materials

Compiling Approved Sample Documentation Materials is the crucial final step in the sample development process, where all finalised and approved information related to a product's design and specifications is systematically gathered and organised. This ensures a comprehensive and accurate record for manufacturing and future reference, acting as the definitive blueprint for production. The Assistant Designer is responsible for meticulously assembling these materials, which include the final technical pack, approved fit comments, graded specifications, material swatches, and any specific construction notes, ensuring every detail is accurate and readily accessible for seamless production handover.

- **Preparing Final Approved Sample File**

This step involves organising all documents related to the final approved sample in one complete file. The file includes the final Techpack, approval sign-offs, measurement specs, fabric/trims details, and buyer confirmation notes. This becomes the master reference for production, ensuring consistency and reducing errors.

- **Documenting Records of Sample Evaluation**

All evaluations during proto and fit stages are recorded for future reference and quality tracking. Evaluation sheets, review forms, buyer feedback, and sample history logs are filed in chronological order. This documentation helps track design decisions and improves accountability and traceability throughout the process.

- **Updating Records after Sample Modifications**

When a sample is modified based on feedback, related documents such as revised Techpacks, costing sheets, and pattern updates are also revised and saved. Designers use version control systems, modification logs, and updated approval forms for this process. This ensures that the most current and approved information is used during production.

Checklist Item	Verified
Approved physical sample is labelled and stored properly	<input type="checkbox"/>
Final tech pack is updated and filed	<input type="checkbox"/>
Sample approval form signed by all required parties	<input type="checkbox"/>
Fabric and trim swatches are attached	<input type="checkbox"/>
Fit comments and approvals are documented	<input type="checkbox"/>
Measurement chart with final sample data is included	<input type="checkbox"/>
High-resolution photos of the approved sample are saved	<input type="checkbox"/>
Packaging and labelling instructions finalised and filed	<input type="checkbox"/>
Supplier confirmation of sample approval is recorded	<input type="checkbox"/>
All documents are archived in the central records system	<input type="checkbox"/>
Remarks if any	

Table. 3.1.3: Compiling approved sample documentation materials – checklist

Summary

- Design process includes planning, research, and idea creation.
- Sample evaluation must follow company protocols.
- Progress should be monitored and documented regularly.
- Compliance with buyer and safety standards is essential.
- Tasks must be sequenced after making changes.
- Direct solutions should be applied to design problems.
- New ways should be explored to review samples faster.
- Design inputs must match the expected output.
- Errors in sample development must be analysed.
- Feedback should be used to refine design.
- Fit samples must match Techpack instructions.
- Approved sample files should include all key materials.

Exercise

Multiple-choice Question:

1. What is the first step in the design process?
 - a. Final costing
 - b. Planning and research
 - c. Dyeing process
 - d. Sample packaging

2. What should be done after receiving client feedback?
 - a. Discard the sample
 - b. Wait for production
 - c. Apply changes and refine design
 - d. Start a new design

3. What does a Techpack usually include?
 - a. Marketing strategy
 - b. Fabric swatches and cost sheet
 - c. Retail tags
 - d. Warranty cards

4. Which of the following is checked in a proto sample?
 - a. Store layout
 - b. Fit, design, and utility
 - c. Employee attendance
 - d. Invoice copy

5. How should communication with the sample team be done?
 - a. Through visuals only
 - b. Without documentation
 - c. Clearly and as per need
 - d. Using only printed letters

Descriptive Questions:

1. Describe the main steps in the design development process.
2. How do you refine a design after receiving feedback?
3. What details are checked in a proto sample?
4. How can flaws in proto samples be identified?
5. What materials should be included in the approved sample file?

4. Maintain Health, Safety and Security in the Designing Department with Gender and PwD Sensitization



Unit 4.1 - Workplace Health and Safety Measures

Unit 4.2 - Emergency and Environmental Response

Unit 4.3 - Gender, Inclusion, and Safe Equipment Use



Key Learning Outcomes

By the end of this module, the participants will be able to:

1. Describe key practices to maintain health and safety at the workplace.
2. Outline common workplace hazards and how they can be controlled.
3. Elaborate on the correct selection and usage of personal protective equipment.
4. Prepare to handle minor injuries and basic first aid needs.
5. Elucidate the steps for proper waste disposal and upkeep routines.
6. Elaborate on fire safety protocols, including the use of fire extinguishers, evacuation plans, and emergency response procedures.
7. Describe procedures for conducting mock drills and safe evacuation.
8. Prepare to follow emergency action protocols effectively.
9. Outline how Effluent Treatment Plants operate in industrial settings.
10. Elaborate on how to meet environmental safety and compliance standards.
11. Describe why gender equality and workplace awareness programs are essential for a respectful and fair environment.
12. Describe why gender equality and workplace awareness programs are essential for a respectful and fair environment.
13. Outline the correct techniques for safely handling stitching and cutting tools.
14. Prepare to manage tools and equipment properly to avoid accidents and ensure smooth operations.
15. Elaborate on steps to promote gender-sensitive and inclusive practices in the workplace.
16. Elucidate how to use various equipment safely during routine tasks.

UNIT 4.1: Workplace Health and Safety Measures

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe workplace health and safety practices.
2. Outline potential risks and their management.
3. Elaborate on correct personal protective equipment use.
4. Prepare for basic first aid situations.
5. Elucidate proper disposal and maintenance procedures.
6. Describe the common causes of fire hazards in apparel and home furnishing units and the preventive measures to reduce fire risks.

4.1.1 Workplace Health and Safety Practices

Workplace Health, Safety, and Hygiene focus on maintaining clean, safe, and healthy environments to protect employees' physical and mental well-being, which enhances productivity and satisfaction. An Assistant Designer (Apparel, Made-Ups and Home Furnishings) plays a key role in supporting hygiene practices by following safety guidelines, using tools like PPE, and encouraging cleanliness in shared spaces and sample handling. In India, organisations such as the Ministry of Labour and Employment, CPCB, NSC, and DGFASLI set and enforce occupational hygiene standards through structured regulations and regular assessments. The following are the different workplace health, and safety concerns:

- **Follow workplace safety instructions**

Workplace safety instructions are clear guidelines provided to employees to prevent accidents, injuries, and health risks while performing their duties. These instructions include the proper use of equipment, emergency procedures, and safe work practices to ensure a secure and hazard-free environment.

The following table includes general instructions and those specific to Apparel, Home-Furnishing, and Made-ups & Decor sectors:

Instruction Category	General Instructions	Sector-Specific Instructions (Apparel, Home-Furnishing, Made-ups & Decor)
Personal Protective Equipment	Wear masks, gloves, and safety shoes as per work requirements	Use lint-free masks in apparel; use dust-resistant gloves in home-furnishing and made-ups handling
Machine & Tool Safety	Turn off machines when not in use; never bypass safety guards	Ensure needle guards are in place in sewing machines (apparel); maintain sharpness of cutting tools
Fire and Electrical Safety	Keep fire exits clear; do not overload circuits	Avoid loose threads near electrical outlets (apparel); secure fabric rolls away from electric panels
Cleanliness and Hygiene	Keep the work area clean and dry; disinfect tools regularly	Remove fabric scraps promptly in apparel; vacuum upholstery dust in home-furnishing units

Instruction Category	General Instructions	Sector-Specific Instructions (Apparel, Home-Furnishing, Made-ups & Decor)
Ergonomic Practices	Use proper posture; take breaks to prevent fatigue	Adjustable chairs at sewing stations; padded flooring near cutting tables (home-furnishing & decor)
Chemical and Material Handling	Label all chemicals; wear goggles and gloves when handling	Handle dyes and solvents carefully (apparel); store polish and glues safely (decor and made-ups sector)

Table 4.1.1: Workplace health and safety checklist for apparel, home-furnishing, and made-ups & decor sectors

- **Workplace health and safety practices**

Workplace health and safety practices help prevent injuries, accidents, and long-term health issues. These practices include proper use of tools, protective gear, and adherence to safety rules. In apparel, home-furnishing, made-ups, and decor sectors, following safety practices ensures workers are protected from hazards like fabric dust, sharp tools, and heavy machinery. Accidents at the workplace can result in injuries, property damage, and loss of productivity. Identifying potential situations that may lead to accidents and implementing preventive measures is crucial for maintaining a safe working environment. Below is a table consisting of common workplace accident scenarios and the ways to prevent them:

Type of Accidents/Hazards	Prevention Methods
Slips, Trips, and Falls	Keep floors dry and free of clutter. Use proper lighting and secure loose cables.
Improper Handling of Tools	Maintain tools regularly and provide training. Use safety guards on machines.
Falling Objects	Store heavy items on lower shelves. Secure overhead items and use helmets.
Exposure to Hazardous Substances	Label all containers correctly. Train workers and ensure ventilation is proper.
Electrical Hazards	Inspect electrical systems regularly. Avoid overloading and keep areas dry.
Fire and Explosions	Maintain fire safety equipment. Store flammable items properly and enforce no smoking.
Overexertion and Repetitive Strain	Train workers on lifting techniques. Provide breaks and use ergonomic furniture.
Stress and Fatigue	Set reasonable work hours. Offer stress relief programs and supportive culture.
Fabric-Related Injuries and Hazards	Clean fabric areas and use dust masks. Train workers and install machine guards.

Table 4.1.2: Types of workplace accidents and hazards

- **Understand written safety instructions**

Being able to understand written safety instructions helps workers follow correct procedures and avoid mistakes. These instructions are usually displayed through posters, labels, or notices in simple language. In sectors like apparel and home-furnishing, reading and understanding these instructions is crucial for tasks involving machines, dyes, and materials.



Fig. 4.1.1: Hazard and Safety Symbols

- **Read safety manuals, guidelines**

Safety manuals and guidelines provide detailed information about workplace risks and how to handle them. Workers should read these documents to know emergency exits, first-aid steps, and equipment handling. In made-ups and decor industries, such manuals are key for handling chemicals, cutting tools, and power-operated machines safely.

Safety Work Instructions [Template]

[DELETE AFTER READING: Here is a generic template that you can use to outline and share an Operational Manual using Scribe. You can learn more about Scribe here and see how to duplicate and use this template here.]

[Activity Title]

Section 1

Created By:

Document no.:

Risk assessment no.:

Initial issue Date:

Current version:

Next review date:

Scope of the the process

Authorization required to perform the task:

Fig. 4.1.2: Workplace Safety Instruction Template

- **Promote inclusive work environment**

An inclusive work environment respects and supports workers from all backgrounds. It improves teamwork, job satisfaction, and reduces workplace conflicts. In apparel and home-furnishing units, inclusivity ensures that diverse workers—men, women, or differently-abled—work together safely and respectfully.



Fig. 4.1.3: Strategies of Inclusive Work Environment

- **Collaborate for safe task completion**

Working together and sharing safety responsibilities helps complete tasks without harm. Team coordination reduces errors and ensures everyone follows safety rules. In made-ups and decor production lines, collaboration between stitching, finishing, and packing staff helps maintain safe workflows.

Task Tracker Template

Task Title	Status	Priority	Start Date	Due Date	Percentage of Task Complete	Comments
	<input checked="" type="checkbox"/>	High				
	<input checked="" type="checkbox"/>	Medium				
	<input type="checkbox"/>	Low				

Fig. 4.1.4: Task Completion checklist

- **Keep work area clean**

A clean work area prevents slips, falls, and equipment damage. It also improves efficiency and reduces fire or health hazards. In apparel and home-furnishing sectors, cleanliness is critical to manage fabric waste, avoid thread entanglement, and ensure quality control.



Fig. 4.1.5: Workspace Cleaning Checklist

- **Personal hygiene and substance awareness**

Maintaining good personal hygiene keeps workers healthy and prevents the spread of infections. Substance awareness means avoiding alcohol, drugs, or harmful chemicals at the workplace. In made-ups, decor, and apparel units, poor hygiene or substance use can lead to safety risks around machines, tools, and fabrics.



Fig. 4.1.6: Personal hygiene

Substance awareness means understanding the harmful effects of drugs, alcohol, and other addictive substances on a person's health and behaviour. It helps individuals make safer choices and avoid problems like illness, accidents, or trouble with the law. In the workplace, substance awareness is important to ensure safety, productivity, and a healthy working environment for everyone.

WARNING SIGNS OF TEEN SUBSTANCE ABUSE



Fig. 4.1.7: Substance abuse warning symbols

4.1.2 Potential Risks and Their Management

The apparel industry faces potential risks like fabric dust exposure, machine-related injuries, chemical handling, and fire hazards during manufacturing of garments, home décor, furnishings, and made-ups. Effective risk management includes proper ventilation, use of protective gear, regular machine maintenance, and fire safety compliance. A hierarchy of controls is crucial for workplace risk management as it provides a systematic and prioritised approach to mitigating hazards. By following this hierarchy (elimination, substitution, engineering controls, administrative controls, and PPE), organisations ensure the most effective and sustainable risk reduction strategies are implemented first.

Hierarchy of Controls

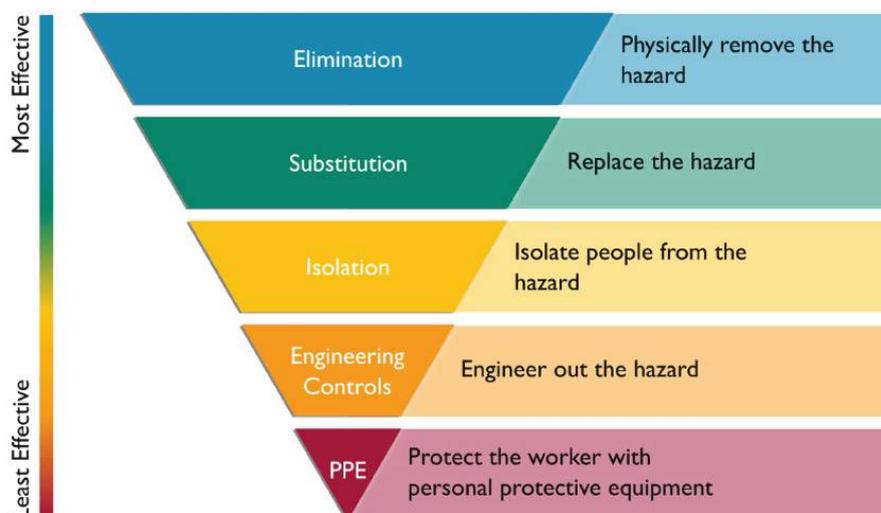


Fig. 4.1.8: Potential Workplace Risk Management Hierarchy

- **Monitor and report workplace hazards**

In the apparel, home furnishings, and made-ups sector, robust monitoring and reporting of workplace hazards are critical to ensure worker safety and regulatory compliance. This involves continuous identification of risks ranging from machinery entanglement and chemical exposure in dyeing units to ergonomic issues in sewing operations and fire hazards from fabric storage.



Fig. 4.1.9: Hazard risk management

Prompt and accurate reporting mechanisms are essential, allowing for immediate investigation, implementation of corrective actions, and a proactive approach to preventing future incidents across all stages of production, from raw material handling to finished goods.



Fig. 4.1.10: Workplace safety hazard dashboard

- **Analyse and respond to emergencies**

It is important to quickly assess the situation during an emergency to reduce harm. Responding calmly and following safety procedures can save lives. In the apparel industry, an assistant designer must know how to safely evacuate and report incidents such as electrical fires or machine-related accidents in the design studio or sampling unit.

- **Use information for decisions**

Using correct data and observations helps in making informed decisions. This includes checking reports, safety manuals, or team inputs before acting. An assistant designer should use accurate garment specifications or defect reports to avoid design or production issues.

- **Resolve machinery malfunction issues**

When machines stop working or show errors, it's important to identify the problem quickly. Minor issues can be fixed by trained staff, while major faults should be reported. In design units, an assistant designer should report any stitching machine malfunction that delays sampling or product finishing.

- **Identify and report harassment**

Recognising signs of verbal, physical, or emotional harassment is critical for a safe workplace. Such cases must be reported to supervisors or HR immediately. In the apparel industry, assistant designers must help maintain a respectful environment by reporting any inappropriate behaviour in the design or production team.

- **Document health and safety incidents**

Keeping records of accidents or unsafe events helps in improving safety measures. It allows companies to track patterns and take preventive steps. Assistant designers should help document studio accidents, like needle injuries or slip-and-fall incidents, for future reference.

- **Stay updated with safety practices**

Safety guidelines may change due to new rules or technologies. Regular training or updates ensure employees follow the latest protocols. Assistant designers must attend safety briefings and apply them while working around cutting or pressing equipment.

4.1.3 Correct Personal Protective Equipment Use

Correct personal protective equipment (PPE) use is fundamental to safeguarding workers from hazards in the workplace. It involves not only wearing the right equipment but also ensuring it fits properly, is maintained well, and is used consistently according to established safety protocols. Proper usage acts as a critical barrier, mitigating exposure to risks that cannot be eliminated or controlled by other means.

- **Importance and use of PPE**

PPE serves as the last line of defence against workplace hazards when other control measures are insufficient or impractical. Its importance lies in minimising the risk of injuries, illnesses, and fatalities by creating a physical barrier between the worker and the hazard. Consistent and correct use of PPE is therefore vital for maintaining a safe working environment and ensuring the well-being of all employees.

- **Select and wear appropriate PPE**

Selecting appropriate PPE requires a thorough hazard assessment of the specific work environment and tasks. Once selected, it's crucial to ensure the equipment fits correctly and is worn properly to provide the intended level of protection.

- **Different Types of PPE for General Use:**

- **Head Protection:** Helmets or hard hats protect against falling objects, impacts, and electrical hazards.
- **Eye and Face Protection:** Safety glasses, goggles, and face shields safeguard against flying debris, chemical splashes, and harmful radiation.
- **Hearing Protection:** Earplugs and earmuffs reduce exposure to excessive noise levels, preventing hearing loss.
- **Hand Protection:** Gloves protect hands from cuts, abrasions, chemicals, burns, and extreme temperatures.
- **Foot Protection:** Safety shoes or boots with reinforced toes and puncture-resistant soles protect feet from falling objects and sharp materials.
- **Respiratory Protection:** Respirators filter airborne contaminants like dust, fumes, and gases, protecting the respiratory system.
- **Body Protection:** Aprons, coveralls, and specialised suits protect the torso and limbs from chemicals, heat, and other physical hazards.



Fig. 4.1.11: Personal protective equipments

○ **PPE Pertinent to the Apparel, Home Furnishing, and Made-Ups Industry:**

- **Cut-Resistant Gloves:** Essential for workers handling sharp cutting tools, fabrics, and patterns to prevent lacerations.



Fig. 4.1.12: Cut-resistant gloves

- **Dust Masks/Respirators:** Crucial in areas with significant fabric dust, lint, or chemical fumes from dyes and finishes to protect respiratory health.



Fig. 4.1.13: Dust Masks/Respirators

- **Safety Glasses:** Protect eyes from flying threads, needles, small debris, or chemical splashes during dyeing or finishing processes.



Fig. 4.1.14: Safety glasses

- **Hearing Protection:** Important for workers operating noisy machinery like industrial sewing machines, weaving looms, or embroidery machines to prevent noise-induced hearing loss.



Fig. 4.1.15: Hearing protection

- **Ergonomic Support (e.g., Back Belts):** While not traditional PPE, these are important for reducing strain during repetitive tasks or heavy lifting of fabric rolls and finished goods.



Fig. 4.1.16: Back belts

- **Slip-Resistant Footwear:** Vital in areas where floors might be wet from dyeing processes or slippery from fabric scraps, preventing slips and falls.



Fig. 4.1.17: Slip resistant footwear

4.1.4 Basic First Aid Situations Preparation

Injury management in the workplace includes immediate care like cleaning wounds, applying bandages, or performing CPR, guided by proper protocols for assessment, documentation, and medical support. Medical assistance involves professional treatment for serious injuries, while HR and safety officers ensure employees are trained, first aid kits are maintained, and emergency coordination is in place. In India, first aid and injury response are governed by laws like the Occupational Safety, Health and Working Conditions Code, 2020, BIS guidelines, and the Factories Act, 1948. A workplace first aid box must contain essential items such as bandages, antiseptics, burn creams, thermometers, gloves, and a manual to handle minor injuries before medical help arrives.



Fig. 4.1.18: Parts of a first-aid box

- **Administer first aid in emergencies**

First-aid procedures are the initial medical steps taken to help an injured or ill person until professional care is available, aiming to stabilise the condition and prevent it from worsening. Different scenarios like bleeding, burns, fractures, and emergencies require specific methods to provide immediate relief and improve outcomes. The following are the different scenarios where different first-aid methods are applied:

- **Bleeding Control**

Apply direct pressure to the wound with a clean cloth or bandage to stop the bleeding. Elevate the injured part and seek medical help if needed to stabilise the person.



Fig. 4.1.19: Wound dressing

o Burns Treatment

Cool the burn under running water for 10–20 minutes and cover it with a clean, non-stick bandage. Avoid using ice or popping blisters to prevent further damage and infection.



Fig. 4.1.20: General burn first-aid stages

o Fractures Immobilisation

Use a splint or firm object to keep the broken limb from moving, and apply a cold pack to reduce swelling. Keep the person calm and arrange medical transport for proper care.



Fig. 4.1.21: Fracture dressing first-aid

o Choking Relief

Perform the Heimlich manoeuvre by standing behind the person and applying quick, upward abdominal thrusts. Continue until the object is expelled and normal breathing returns.



Fig. 4.1.22: Heimlich manoeuvre stages for first aid of "choking"

- o **Heart Attack**

Let the person chew aspirin (if not allergic) and keep them calm and seated. If they lose consciousness or stop breathing, perform CPR and call for emergency help.



Fig. 4.1.23: Cardiac first-aid

- o **Cardiopulmonary Resuscitation (CPR)**

Cardiopulmonary Resuscitation (CPR) involves 30 chest compressions and 2 rescue breaths to revive someone who isn't breathing. Hands-only CPR uses just compressions, while mouth-to-mouth adds breaths for full support.



Fig. 4.1.24: CPR application technique

- o **Shock Management**

Lay the person flat with legs elevated and cover them with a blanket to keep them warm. Do not give them food or drink, and monitor for signs of deterioration.



Fig. 4.1.25: Shock first-Aid

o Poisoning Assistance

Identify the poison and call a poison control centre for guidance. Only administer activated charcoal if advised, and never induce vomiting unless told to do so.

Type of Poisoning	First-Aid Measures
Food Poisoning	Keep the person hydrated; offer oral rehydration solution (ORS); seek medical help if symptoms worsen.
Chemical Poisoning	Do not induce vomiting; rinse the mouth; identify the chemical and call a poison control centre.
Inhalation Poisoning	Move the person to fresh air immediately; loosen tight clothing and seek emergency help.
Drug Overdose	Keep the person awake if possible; call emergency services; do not give food, drink, or try to make them vomit.

Table 4.1.3: Poisoning first-aids in different scenarios

o Electric Shock Aid

Switch off the power source and use a non-metal object to move the person away from danger. Check for breathing and pulse, and give CPR if necessary.

Stage	First-Aid Measures
1. Disconnect Power Source	Turn off the electricity immediately using a switch or breaker; do not touch the person until power is off.
2. Move the Person Safely	Use a non-conductive object (like wood or plastic) to move the person away from the source.
3. Check for Response	Check breathing and pulse; if unresponsive, begin CPR immediately.
4. Seek Medical Help	Call emergency services and monitor the person until help arrives, even if they seem fine.

Table 4.1.4: Electric shock first-aid

o Foreign Object Removal

Rinse the eye gently with clean water or use sterilised tweezers for splinters. Do not attempt to remove deeply embedded objects to avoid worsening the injury.

Stage	First-Aid Measures
1. Assess the Object and Area	Determine the type and location of the object (eye, skin, etc.); avoid touching or probing.
2. Use Safe Removal Methods	Rinse the eye with clean water or use sterilised tweezers to gently remove splinters.
3. Avoid Deep Probing	Do not attempt to remove deeply embedded objects; it may worsen the injury.
4. Seek Medical Help if Needed	If removal is not possible or if bleeding or pain continues, contact a medical professional.

Table 4.1.5: Foreign object removal first-aid

o Muscle Sprain/Strain

Apply a cold or warm compress wrapped in cloth to reduce pain and swelling. Alternate treatments may be used depending on whether the injury is recent or ongoing.

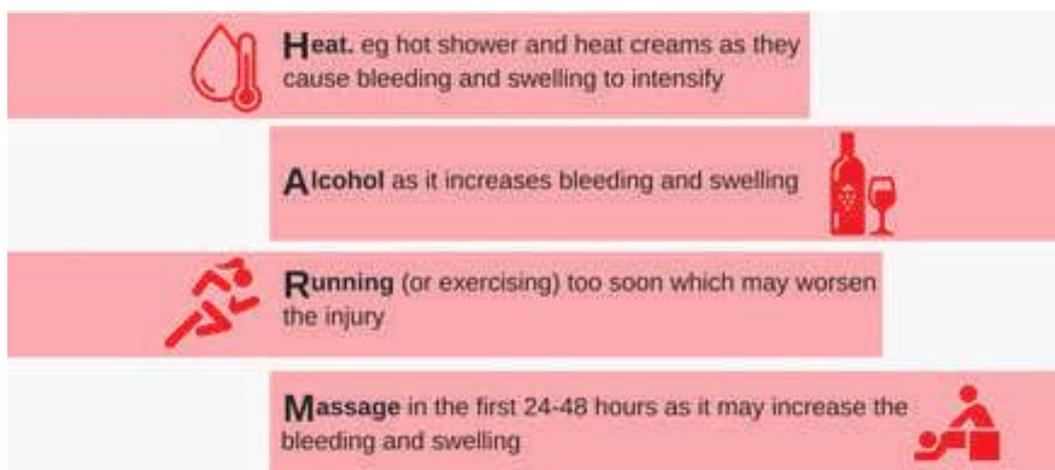


Fig. 4.1.26: Muscle strain/sprain first-aid

o Allergic Reaction Management

Administer antihistamines or an epinephrine auto-injector if symptoms appear. Monitor the person closely and call for emergency help if the reaction worsens.

Type of Allergy	First Aid Measures
1. Food Allergy	Immediately stop consuming the allergen, administer antihistamines, and seek medical help if symptoms escalate (e.g., swelling, breathing difficulty).
2. Insect Bite Allergy	Apply a cold compress, use antihistamines, and seek medical attention if swelling or breathing issues occur.
3. Dust Allergy	Move to a clean air environment, rinse eyes/nose, and use prescribed nasal sprays or antihistamines.
4. Fabric Allergy (e.g., wool, synthetics)	Remove the irritant fabric, wash affected skin with cold water, and apply soothing lotion or corticosteroid cream.

Type of Allergy	First Aid Measures
5. Chemical Allergy (e.g., dyes, solvents)	Rinse skin with clean water for at least 15 minutes, remove contaminated clothing, and seek medical attention.
6. Latex/Glove Allergy (Apparel Industry)	Remove latex items, wash affected area, apply antihistamine or hydrocortisone cream, and use non-latex alternatives.

Table 4.1.6: Allergy types and first-aids

o **Seizure Assistance**

Turn the person gently on their side, clear nearby objects, and protect their head. Do not restrain them or insert anything into their mouth during the seizure.



Fig. 4.1.27: Seizure first-aid

o **Drowning Response**

Safely pull the person from the water and check for breathing and a pulse. If unresponsive, begin CPR and keep them warm while waiting for emergency help.



Fig. 4.1.28: Drowning first-aid

o **Act during emergencies, accidents**

During emergencies or accidents, it is important to stay calm, follow safety protocols, and act quickly to protect yourself and others. First aid kits should be regularly checked and stocked with unexpired, essential items to ensure immediate response is possible. Reception areas must clearly display emergency procedures and contact details, with trained staff ready to guide visitors and handle urgent situations effectively.



Fig. 4.1.29: Accident response and care

4.1.5 Proper Disposal and Maintenance Procedures

Proper disposal and maintenance procedures help keep the workplace safe, equipment functional, and the environment protected. This includes regular cleaning, inspections, and correct disposal of damaged or contaminated materials as per guidelines. The following are the different methods of waste disposal:

- **Methods for General Waste Disposal and Maintenance**

- **Waste segregation:**

Waste segregation involves the systematic separation of different types of waste materials at their source. This practice is crucial for facilitating effective recycling, composting, and proper disposal, thereby minimising landfill waste and maximising resource recovery.



Fig. 4.1.30: Waste Segregation

- **Recycling Programs:**

Separate recyclable materials like paper, plastics, and metals from general waste at the source. This ensures efficient collection and processing for reuse, reducing landfill volume.

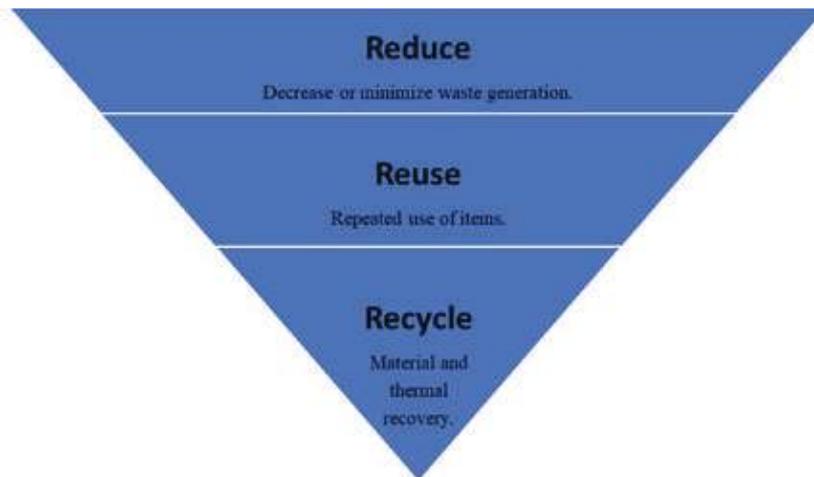


Fig. 4.1.31: Waste recycling programme

- **Safe Chemical Waste Disposal:**

Dispose of hazardous chemicals through approved channels, following all local and national regulations. This prevents environmental pollution and protects workers from dangerous exposures.



Fig. 4.3.32: Safe chemical waste disposal stages

o **Regular Equipment Cleaning:**

Clean machinery and tools routinely to prevent build-up of debris and ensure optimal performance. This extends equipment lifespan and reduces the likelihood of malfunctions.

	DAILY	WEEKLY	MONTHLY	ANNUALLY
Fluid Levels	✓			
Tire Inspection	✓			
Visual Inspection	✓			
Lubrication		✓		
Battery Inspection and Cleaning		✓		
Functional Tests		✓		
Filter Replacement			✓	
Electrical System Check			✓	
Hydraulic System Inspection			✓	
Engine Tune-Up				✓
Structural Inspection				✓
Professional Assessment				✓

Fig. 4.3.33: Equipment cleaning scheduling sample checklist

- **Preventive Maintenance Schedules:**

Implement a scheduled program of inspections and minor repairs for all equipment. This proactive approach identifies potential issues before they become major problems, minimising downtime and costly repairs.

Location/Room Name of Staff Member Year

MAINTENANCE RECORD – EQUIPMENT / MACHINERY

Date	Regular servicing as per Maintenance Checklist / Major or Minor repairs	Maintenance performed by Company / Business / Individual	Time Taken	Cost	Tag-out (If Required)	Tag Removed & Checked by

Fig. 4.1.34: Preventive maintenance checklist

- **Proper Storage of Materials:**

Store raw materials, finished products, and waste in designated, organised areas. This prevents damage, reduces fire hazards, and ensures easy access and efficient workflow.

- **Methods Specific to Apparel, Home Furnishing, and Made-Ups Industries**

- **Fabric Scraps and Offcuts:**

Collect and segregate fabric scraps by type and composition for potential recycling or upcycling initiatives. This reduces textile waste sent to landfills and can create new products.

- **Dye and Chemical Effluent Treatment:**

Treat wastewater containing dyes and chemicals through specialised filtration and neutralisation processes before discharge. This prevents water pollution and complies with environmental regulations.

- **Needle and Sharp Tool Disposal:**

Dispose of broken needles, pins, and other sharp cutting tools in designated puncture-proof containers. This prevents needle-stick injuries and ensures safe handling of hazardous sharps.

- **Machinery Lint and Dust Removal:**

Regularly clean lint, dust, and thread accumulation from sewing machines, cutting tables, and other machinery. This prevents machine breakdowns, fire hazards, and maintains air quality.

- **Recycling Packaging Materials:**

Recycle cardboard boxes, plastic films, and other packaging materials used for raw materials and finished goods. This minimises overall waste and supports sustainable supply chain practices.

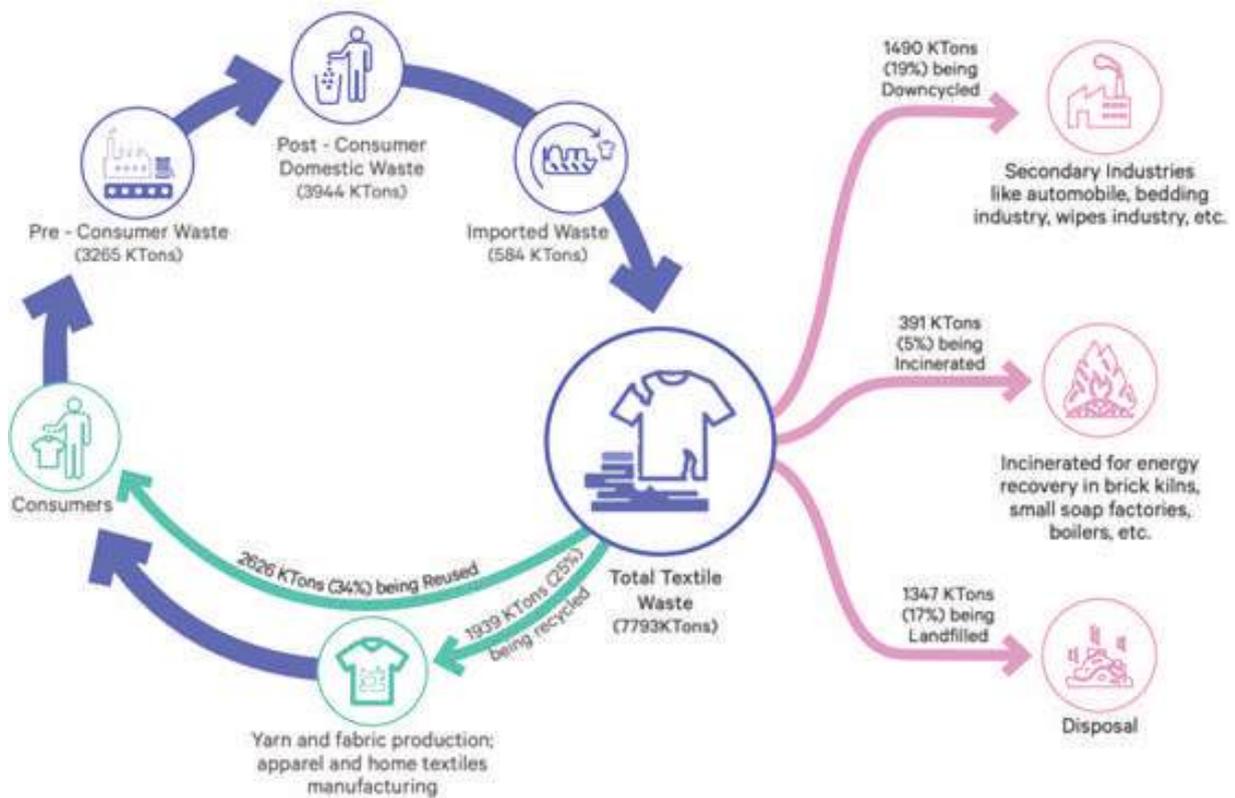


Fig. 4.1.35: Proper disposal of apparels and furnishings in warehouse

o **Handling hazardous substances safely**

Handling hazardous substances safely is paramount to prevent injuries, illnesses, and environmental contamination. This involves a comprehensive approach that includes thorough risk assessments, providing appropriate personal protective equipment, and implementing strict control measures like ventilation and spill containment.



Fig. 4.1.36: Hazardous substances types

Crucially, all personnel handling such substances must receive extensive training on their properties, safe handling procedures, emergency protocols, and proper disposal methods.



Fig. 4.1.37: Hazardous waste disposal

4.1.6 Fire Hazards and Safety

Fire hazards pose significant risks in workplaces or public places, where flammable materials, faulty wiring or cooking activities can lead to fires. Emergency response protocols are essential for ensuring safety and limiting damage during such incidents. For example, a fire starting in a kitchen of a restaurant due to a malfunctioning appliance, requiring the activation of fire alarms, evacuation procedures and firefighting efforts.



Fig. 4.1.38: Fire hazard guidelines

- **Fire chemistry and parts**

Fire is a chemical reaction involving rapid oxidation, and its risks are classified by NFPA zones and the NFPA diamond to guide safety measures in hazardous environments. The zones (0–2 for gases and 20–22 for dust) and the NFPA diamond help identify the presence and severity of fire risks, enabling quick response and appropriate fire prevention strategies. According to NFPA, the three essential parts of a fire are fuel, oxygen, and heat, which together form the fire triangle. Fire cannot start or sustain without all three elements being present. Removing any one of these parts—such as cooling the heat, cutting off oxygen, or removing fuel—can extinguish the fire.

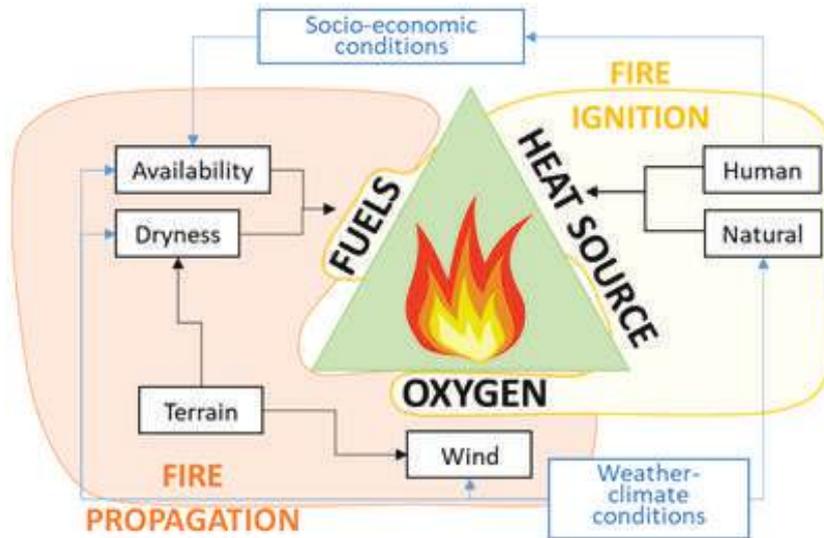


Fig. 4.1.39: Fire triangle

The NFPA provide guidelines and standards for fire prevention and safety, categorising fires based on the materials involved and assessing hazards for effective fire management.

Here's a table based on the organisations' classification of fire and fire hazards:

Type of Fire	Description	Type of Fire Hazard	Example
Class A (Ordinary Combustibles)	Fires involving common combustibles like wood, paper, and fabric.	Fire hazard from solid, or organic materials.	Paper, textiles, wooden furniture.
Class B (Flammable Liquids)	Fires caused by flammable liquids such as gasoline, oil, and solvents.	Fire hazard from liquid fuel or vapour.	Oil, gasoline, paint.
Class C (Electrical Fires)	Fires caused by electrical equipment or wiring.	Electrical fire hazard due to faulty wiring or appliances.	Electrical appliances, circuits, transformers.
Class D (Metal Fires)	Fires involving combustible metals like magnesium, aluminium, and titanium.	Fire hazard from reactive metals.	Metal dust or shavings, magnesium.

Type of Fire	Description	Type of Fire Hazard	Example
Class K (Cooking Oils and Fats)	Fires caused by heated oils or fats, often occurring in kitchens.	Fire hazard from hot oils or fats.	Cooking oils, fats, and and grease.

Table 4.1.7: NFPA classification of fire and fire hazards

- Fire extinguishers:**

A fire extinguisher is a portable device used to control small fires by removing heat, fuel, or oxygen—key elements needed for fire. It is designed for emergency use before professional firefighting services arrive. Key parts of a fire extinguisher include the cylinder, handle, pin, lever, nozzle or hose, pressure gauge, base, and the extinguishing agent inside. Each part plays an important role in safely operating the extinguisher and directing the extinguishing substance onto the fire.

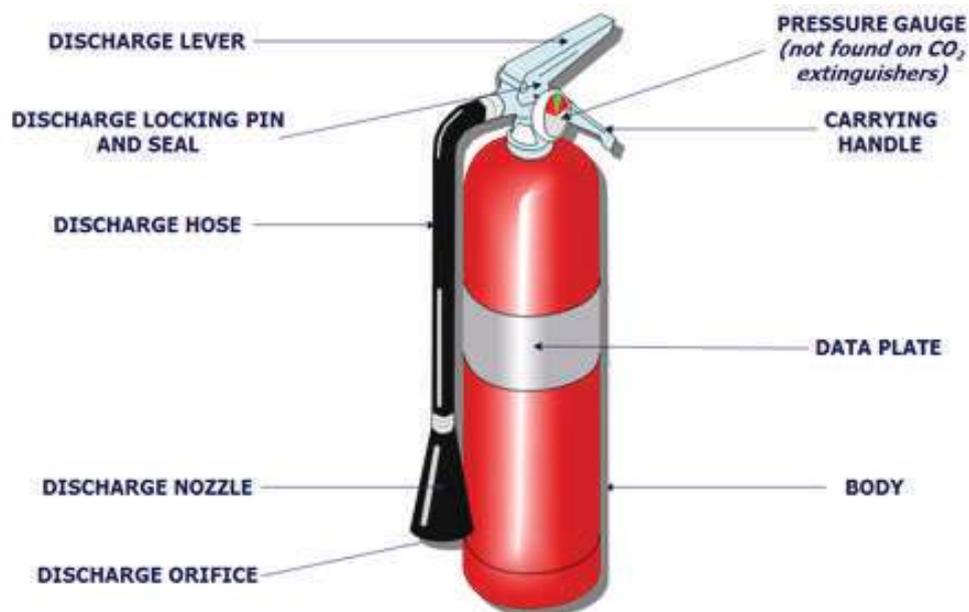


Fig. 4.1.40: Parts of a fire extinguisher

As per the National Fire Protection Association (NFPA), the following are the types of fire extinguishers:

Fire Extinguisher Type	Common Name	Usage	Image
Class A	Water or Foam Extinguishers	Used for ordinary combustibles like wood, paper, or or cloth. These extinguishers cool the fire by removing heat.	

Fire Extinguisher Type	Common Name	Usage	Image
Class B	Carbon Dioxide or Foam Extinguishers	Used for flammable liquids like gasoline, oil, or or solvents. These extinguishers displace oxygen and suffocate the fire.	
Class C	Dry Chemical Extinguishers	Used for electrical fires. These extinguishers interrupt the chemical reaction of the fire.	
Class D	Dry Powder Extinguishers	Used for metal fires such as magnesium or sodium. These extinguishers create a barrier between the fuel and oxygen.	
Class K	Wet Chemical Extinguishers	Used for kitchen fires involving cooking oils, fats, or or grease. These extinguishers work by cooling and forming a barrier to prevent re-ignition.	

Table 4.1.8: NFPA categories of fire extinguishers

- **Methods for usage of fire extinguishers**

Before using a fire extinguisher, ensure the fire is small and manageable and that you have a clear escape path. Always use the correct extinguisher type for the fire class to avoid worsening the situation. Follow the PASS method: Pull the pin, Aim at the fire's base, Squeeze the handle, and Sweep side to side to extinguish the fire effectively.



Fig. 4.1.41: PASS method of fire extinguisher image

UNIT 4.2: Emergency and Environmental Response

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe mock-drill and evacuation procedures.
2. Prepare for emergency response processes.
3. Outline the operation of Effluent Treatment Plants.
4. Elaborate on compliance with environmental guidelines.
5. Elucidate safe maintenance and cleaning of tools.

4.2.1 Mock-Drill and Evacuation Procedures

Regular mock drills are essential for familiarising personnel with emergency procedures, ensuring they know how to respond effectively during an actual crisis. These drills simulate various emergency scenarios, allowing individuals to practice evacuation routes, assembly points, and communication protocols in a controlled environment. Consistent participation in and review of these drills help to identify weaknesses in current plans and improve overall emergency preparedness.

Emergency Preparedness
Mock drill Plan

Formal No.:

Sr. No	Plan Month	Actual Date	Hazard / Scenario	Location / Area	People Involvement	Type of Exercise	Remarks
01							
02							
03							
04							
05							
06							
07							
08							
09							
10							

Fig. 4.2.1: Mock drill preparedness checklist

- **Participate in safety drills**

Active participation in safety drills is crucial for every individual in the workplace, as it provides hands-on experience in emergency response. It allows employees to practice their roles, understand evacuation routes, and become familiar with emergency equipment. This practical knowledge significantly reduces panic and improves the efficiency of evacuation efforts during real emergencies.

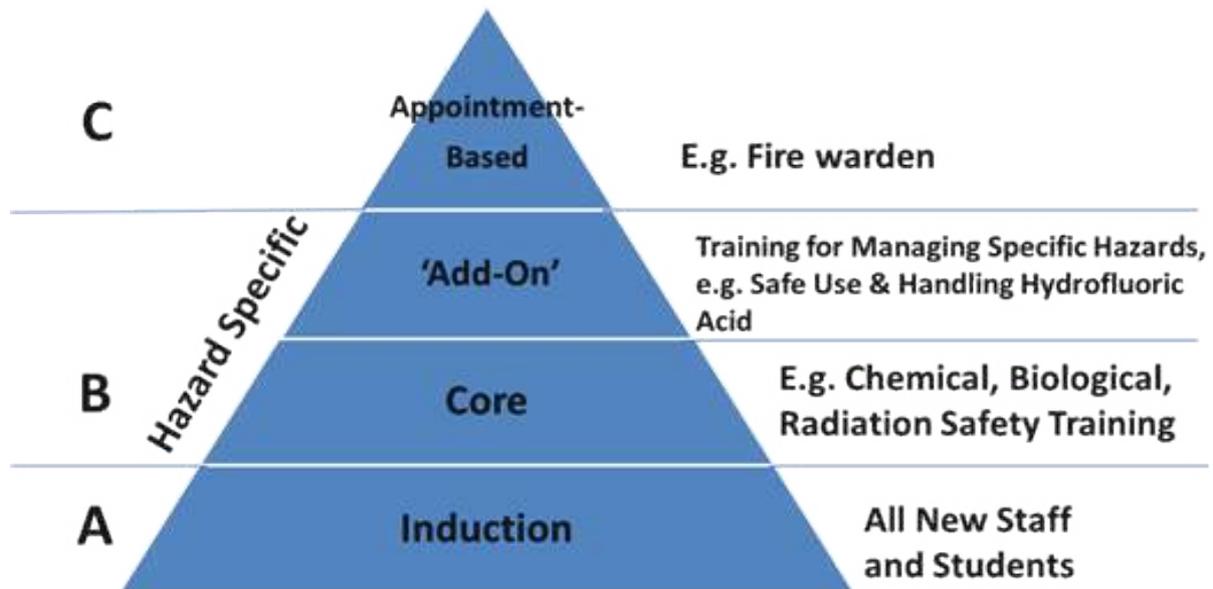


Fig. 4.2.2: Safety drill stages

- **Plant layout and emergency exits**

A clear understanding of the plant layout and the location of all emergency exits is fundamental for a safe and swift evacuation. All employees must be aware of their primary and secondary escape routes, ensuring they can navigate to safety even if one exit is blocked. Clearly marked and unobstructed emergency exits are critical for rapid egress during any unforeseen event.

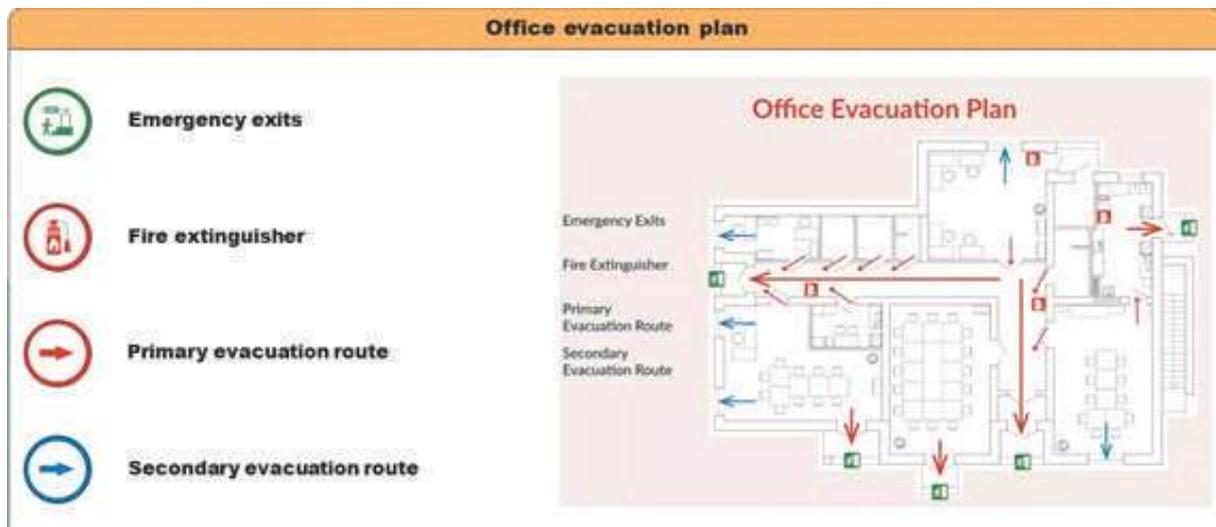


Fig. 4.2.3: Evacuation plan

4.2.2 Emergency Response Processes Preparation

Comprehensive preparation of emergency response processes is vital for minimising the impact of unforeseen incidents and protecting lives and property. This involves developing detailed plans for various emergencies, including fire, medical emergencies, and natural disasters, outlining roles, responsibilities, and communication channels. Regular review and updating of these plans, alongside training for all personnel, ensures a coordinated and effective response when an emergency strikes.

EMERGENCY OPERATIONS PLAN



Fig. 4.2.4: Emergency response plan stages

- Safety incident reporting protocols**

Robust safety incident reporting protocols are essential for capturing and analysing all workplace accidents, near misses, and hazardous conditions. These protocols ensure that every incident, no matter how minor, is documented, investigated, and reviewed to identify root causes and implement corrective actions. Transparent and accessible reporting encourages employees to report concerns without fear, fostering a proactive safety culture.

PERSON INVOLVED IN THE INCIDENT

Full Name: _____

Home Address: _____

Contact Numbers: _____

Student
 Employee
 Visitor
 Vendor

INCIDENT INFORMATION

Date: _____ Time: _____ Police Notified Yes No

Location of Incident: _____

Incident Description: Include details on how the incident happened, factors leading to the event, and what took place. Be as specific as possible.

Were there witnesses to the incident? Yes No If yes, please attach a separate sheet with the names, addresses, and phone numbers of the witnesses.

Was the individual injured? Yes No

Describe the injury, or the incident, if injured and other important information:

Was medical treatment provided? Yes No Refused treatment

Where was the treatment provided? On site Emergency room Other

REPORTER INFORMATION

Name of Individual submitting the report:

Signature:

Date completed:

FOR OFFICIAL USE ONLY

Report received by:

Date:

INCIDENT INFORMATION

Date	Action Taken	Name

Fig. 4.2.5: Incident reporting form

- **Organisation's code of conduct**

An organisation's code of conduct plays a critical role in promoting a strong safety culture by outlining expected behaviours and responsibilities related to workplace safety. It establishes clear guidelines for ethical conduct, including adherence to safety procedures, reporting of hazards, and respectful interaction with colleagues during emergency situations. By integrating safety principles into the core values, the code of conduct reinforces the importance of a safe working environment for everyone.





Fig. 4.2.6: Organisational code of conduct template

4.2.3 Operation of Effluent Treatment Plants

The efficient operation of Effluent Treatment Plants (ETPs) is crucial for industries, particularly those in apparel and home furnishings, to manage and purify industrial wastewater before discharge. ETPs remove pollutants, chemicals, and contaminants from the water, ensuring compliance with environmental regulations and preventing water pollution. Proper maintenance and continuous monitoring of ETPs are essential to guarantee their effective performance and minimise the environmental footprint of industrial operations.



Fig. 4.2.7: Effluent treatment plant

4.2.4 Environmental Guidelines Compliance Elaboration

Compliance with environmental guidelines is non-negotiable for sustainable industrial operations, especially in sectors with significant resource consumption and waste generation. This involves understanding and adhering to local, national, and international environmental regulations concerning emissions, waste disposal, water usage, and chemical management. Proactive compliance not only avoids legal penalties but also demonstrates a commitment to corporate social responsibility and environmental stewardship.

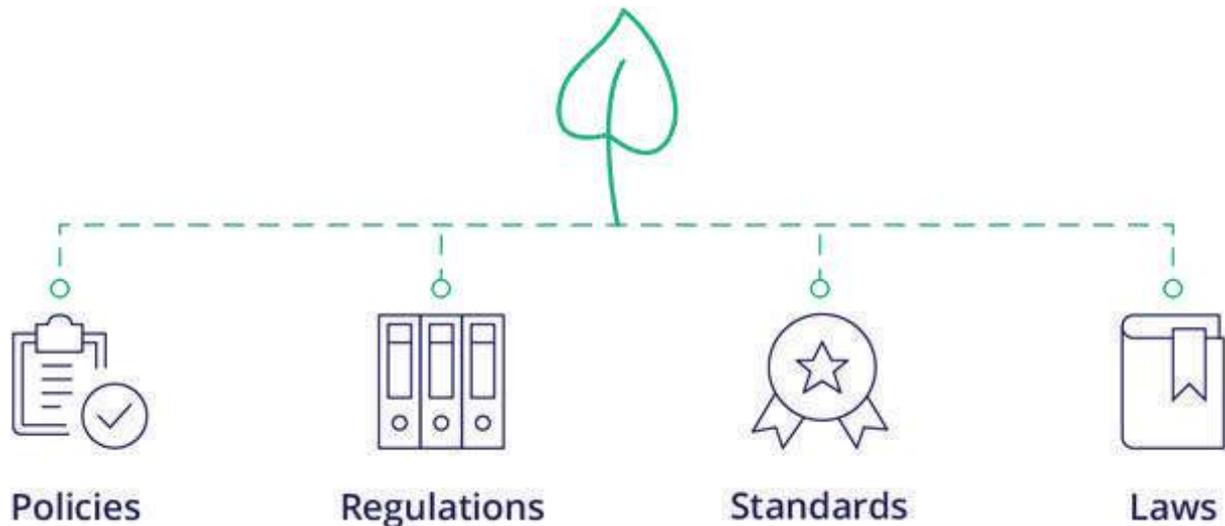


Fig. 4.2.8: Environmental compliance parameters

The following table shows some key environmental regulations and acts of India:

Act / Regulation	Purpose / Objective	Implementing Agency
The Environment (Protection) Act	Provides protection and improvement of the environment and control of pollution.	Ministry of Environment, Forest and Climate Change (MoEFCC)
The Water (Prevention and Control of Pollution) Act	Prevents and controls water pollution and maintains/restores water quality.	Central & State Pollution Control Boards
The Air (Prevention and Control of Pollution) Act	Prevents, controls, and abates air pollution.	Central & State Pollution Control Boards
The Forest (Conservation) Act	Conserves forests and regulates deforestation and diversion for non-forest use.	MoEFCC & Forest Departments
The Wildlife (Protection) Act	Protects wildlife, their habitats, and controls illegal trade of wildlife species.	Wildlife Crime Control Bureau, MoEFCC
The National Green Tribunal Act	Establishes NGT for quick disposal of environmental cases.	National Green Tribunal (NGT)
The Biological Diversity Act	Conserves biological diversity and ensures sustainable use of natural resources.	National Biodiversity Authority
The Hazardous Wastes (Management and Handling) Rules	Regulates handling, treatment, and disposal of hazardous wastes.	Central & State Pollution Control Boards
The E-Waste (Management) Rules	Manages e-waste generation, recycling, and eco-friendly disposal.	CPCB & SPCBs
The Plastic Waste Management Rules	Manages plastic waste and promotes reuse and recycling.	Urban Local Bodies, CPCB & SPCBs

Act / Regulation	Purpose / Objective	Implementing Agency
The Noise Pollution (Regulation and Control) Rules	Regulates and controls noise levels in public and residential areas.	SPCBs & District Authorities

Table 4.2.1: Key environmental regulations of India

4.2.5 Safe Maintenance and Tool Cleaning

Safe maintenance and tool cleaning procedures are fundamental for ensuring the longevity of equipment and the safety of workers. This includes implementing lockout/tagout procedures before maintenance to prevent accidental machine start-up and establishing regular cleaning schedules to remove debris and prevent wear. Adherence to these practices minimises mechanical failures, reduces the risk of accidents, and extends the operational life of valuable assets.

- **Use and maintain tools safely**

Using and maintaining tools safely is paramount for preventing injuries and ensuring efficient work. This involves selecting the correct tool for the job, inspecting it for damage before use, and operating it according to manufacturer guidelines. Regular cleaning, lubrication, and proper storage are also vital for maintaining tools in good working condition, reducing the risk of malfunction or personal harm.

The table that follows shows the different key stages of equipment cleaning and maintenance:

Stage	Description	Scheduling Emphasis
1. Inspection	Check equipment for dirt, wear, damage, or malfunction before cleaning.	Conduct before each use or as per weekly inspection plan.
2. Cleaning	Remove dust, dirt, or residue using appropriate tools and cleaning agents.	Schedule daily or after every use, depending on equipment type.
3. Maintenance	Lubricate, tighten, or replace parts as needed following manufacturer's guide.	Perform monthly or quarterly maintenance checks.
4. Testing and Storage	Test equipment to ensure it works properly, then store it safely and correctly.	Test after maintenance and ensure proper storage every day.

Table 4.2.2: Tools and equipment cleaning and maintenance stages

UNIT 4.3: Gender, Inclusion, and Safe Equipment Use

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe the importance of gender equality and workplace awareness programs.
2. Outline proper methods for safe handling of stitching tools.
3. Prepare to handle tools and equipment securely.
4. Elaborate on ensuring gender-sensitive and inclusive practices.
5. Elucidate the safe usage of different equipment in daily operations.

4.3.1 Gender Equality Importance Discussion

Discussions on the importance of gender equality are crucial for fostering an inclusive and equitable workplace culture. These conversations highlight the benefits of diverse perspectives, equal opportunities for career advancement, and fair treatment for all employees regardless of gender. By raising awareness and addressing unconscious biases, such discussions pave the way for a more respectful and productive work environment. In India, these efforts are primarily supported and guided by the Ministry of Women and Child Development (MWCD), Government of India, which is responsible for implementing policies and laws that promote gender equality and empower women in all sectors, including the workplace.



Fig. 4.3.1: Ministry of Women and Child Development (MWCD) official logo

- **Importance of gender equality**

Gender equality is fundamental for creating a fair and just society and a thriving workplace. It ensures that all individuals have equal opportunities, rights, and responsibilities, free from discrimination. In a business context, promoting gender equality leads to increased innovation, improved decision-making, higher employee morale, and ultimately, better financial performance.

- **Participate in sensitisation workshops**

Participation in sensitisation workshops is a proactive step towards understanding and addressing gender biases and stereotypes in the workplace. These workshops provide a safe space for open dialogue, critical reflection, and learning about the impact of gender-based discrimination. By engaging in such programs, individuals can develop greater empathy and adopt more inclusive behaviours, contributing to a more equitable environment.

- **Attend sensitisation training programs**

Attending sensitisation training programs is vital for equipping employees with the knowledge and skills to identify and challenge gender inequality. These programs offer structured learning on topics such as unconscious bias, gender stereotypes, and respectful communication. Through these trainings, individuals can become more aware of their own biases and learn practical strategies to promote a more inclusive and respectful workplace culture.

4.3.2 Safe Stitching Tool Handling

Safe stitching tool handling is paramount in the apparel and made-ups industry to prevent injuries and ensure product quality. This involves proper training on the use of various stitching machines, needles, and cutting tools, emphasising correct posture and hand placement. Regular maintenance and prompt replacement of dull or damaged tools are also critical to minimise risks and ensure efficient, safe operations. The following are the different safety concerns that should be considered while handling the stitching tools:

- **Sewing Machine Safety Guidelines**

Proper training on machine operation, including threading and troubleshooting, is essential to prevent accidents. Maintaining a correct posture and keeping hands at a safe distance from the needle and moving parts are crucial to avoid punctures or entanglement. Regular tool maintenance, such as cleaning lint and ensuring all guards are in place, alongside an organised work area free from clutter, ensures smooth and hazard-free operation.



Fig. 4.3.2: Sewing machine and components

- **Needle Safety Guidelines**

Proper training on selecting the correct needle size and type for the fabric, along with safe insertion and removal techniques, minimises breakage and injury. Maintaining correct hand placement, keeping fingers away from the stitching line, and using a thimble for hand sewing are vital to prevent accidental pricks. Regular inspection of needles for bends or rust, proper disposal of broken needles in a sharps container, and an organised work area with pins and needles secured in pin cushions or magnetic holders are crucial for safety.



Fig. 4.3.3: Sewing needle set

- **Fabric Shears Safety Guidelines**

Proper training on handling and cutting techniques, including holding the fabric steady and cutting away from the body, is critical to prevent cuts. Maintaining a correct posture to avoid strain and ensuring a stable grip on the shears are important for precise and safe cutting. Regular tool maintenance, such as keeping shears sharp and clean, along with an organised work area where shears are stored safely when not in use, minimises the risk of accidental injury.



Fig. 4.3.4: Fabric shear

4.3.3 Secure Tool and Equipment Handling

Secure tool and equipment handling is essential across all industrial operations to prevent accidents and ensure the longevity of valuable assets. This encompasses proper storage, transportation, and usage protocols for all tools and machinery, emphasising the importance of using the right tool for the job. Strict adherence to these procedures minimises the risk of damage to equipment, materials, and most importantly, personnel.

Tool Category	Secure Handling Practices
Sewing Machines and Tools	Industrial sewing machines, bobbins, and needles must be switched off during threading or maintenance. Machines should be cleaned and oiled regularly, and accessories must be stored safely and used by trained personnel.
Fastening Tools	Snap setters, buttonhole cutters, and rivet pliers must be aligned properly before use to avoid damage. These tools should be stored with protective caps, and damaged tools should be repaired or replaced immediately.
Embroidery & Finishing Tools	Embroidery frames, embellishment tools, and needles should be sorted by size and stored in labelled boxes. They must be kept clean, and damaged or broken needles should be disposed of safely in sharps containers.
Furniture & Large Equipment	Cutting tables, mannequins, and storage racks must be placed on level surfaces and securely locked if movable. They should not be overloaded, and regular inspections and staff training must be conducted for safe usage.

Table 4.3.1: Tools and secure handling practices

4.3.4 Gender-Sensitive Practices in Apparel

Implementing gender-sensitive practices in the apparel industry involves creating an environment that acknowledges and addresses the unique needs and challenges faced by different genders. This includes ensuring fair wages, safe working conditions, and respectful treatment for all employees, irrespective of gender. Such practices contribute to a more equitable and productive workforce, fostering a positive reputation for the industry. The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 mandates gender-sensitive practices by requiring safe, respectful, and inclusive work environments for women in all workplaces across India.

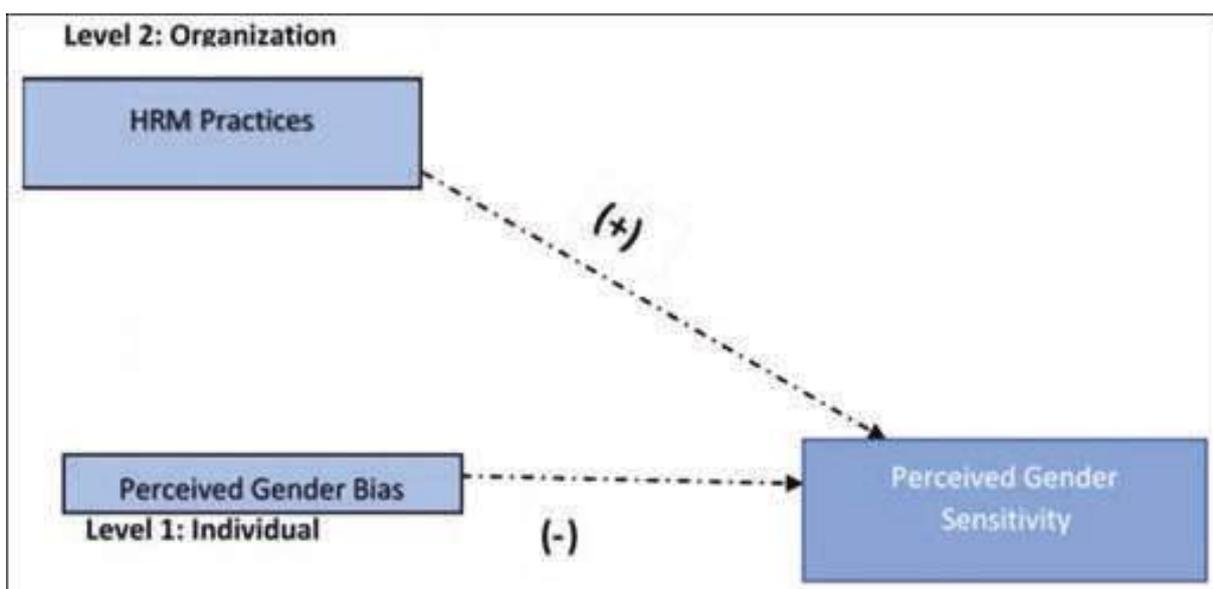


Fig. 4.3.6: Gender sensitive practices levels

- **Creating a safe, accessible environment**

Creating a safe and accessible environment for all employees is a core aspect of gender-sensitive practices, particularly for women who constitute a significant portion of the apparel workforce. This involves providing well-lit and secure workspaces, accessible restrooms, and safe transportation options. Additionally, it includes implementing policies against harassment and discrimination to ensure that everyone feels secure and respected in their workplace. The Protective Textiles (Quality Control) Order, 2022, looks after safety and quality standards for products, particularly regarding fire safety in home furnishings.

Gender-Inclusive Practice	Relevant Indian Acts/Policies	Responsible Ministry/Body
Safe, accessible workplace facilities	The Sexual Harassment of Women at Workplace Act, 2013	Ministry of Women and Child Development
Secure, well-lit working conditions	Factories Act, 1948 (with state-specific rules on lighting, ventilation, safety)	Ministry of Labour and Employment
Anti-harassment and grievance redressal mechanisms	POSH Act, 2013 (Prevention, Prohibition, and Redressal of Sexual Harassment)	Internal Complaints Committee (ICC), Ministry of Women and Child Development
Gender-neutral recruitment and fair wages	Equal Remuneration Act, 1976 (repealed, now under Code on Wages, 2019)	Ministry of Labour and Employment
Safe transport facilities for women	Motor Vehicles (Amendment) Act, 2019 – with state transport rules for employee commutes	Ministry of Road Transport and Highways
Fire safety in home furnishing units	Protective Textiles (Quality Control) Order, 2022	Ministry of Textiles, Bureau of Indian Standards (BIS)
Gender-sensitisation awareness and training	National Policy for Skill Development and Entrepreneurship, 2015	Ministry of Skill Development and Entrepreneurship
Accessibility for women with disabilities	Rights of Persons with Disabilities Act, 2016	Department of Empowerment of Persons with Disabilities
Gender-Inclusive Practice	Relevant Indian Acts/Policies	Responsible Ministry/Body
Safe, accessible workplace facilities	The Sexual Harassment of Women at Workplace Act, 2013	Ministry of Women and Child Development

Table 4.3.2: Gender-sensitive practices

4.3.5 Safe Equipment Usage in Operations

Safe equipment usage in operations is non-negotiable for preventing workplace accidents and ensuring the well-being of employees. This requires comprehensive training on the proper operation of all machinery, adherence to safety protocols, and regular equipment inspections to identify and address potential hazards. By prioritising safe usage, businesses can minimise downtime, reduce injury rates, and create a more secure working environment.



Fig. 4.3.7: Safe sewing room

- **Accommodating persons with disabilities**

Accommodating persons with disabilities within operational settings is a crucial aspect of creating an inclusive and equitable workplace. This involves making necessary modifications to workspaces, equipment, and processes to ensure accessibility and enable individuals with disabilities to perform their duties effectively and safely. Providing reasonable accommodations not only complies with legal requirements but also enriches the workforce with diverse talents and perspectives.

- **PwD Act:**

The Rights of Persons with Disabilities (PwD) Act, 2016 is the key law in India that protects and promotes the rights of individuals with disabilities. It replaced the earlier PwD Act of 1995 to align with the United Nations Convention on the Rights of Persons with Disabilities (UNCPRD), which India ratified in 2007. The Act recognises 21 types of disabilities, including physical, intellectual, mental, and multiple disabilities. It mandates equal opportunity, accessibility, and non-discrimination in education, employment, and public services. Government and private sector establishments are required to provide reasonable accommodations, barrier-free infrastructure, and a 4% reservation in jobs and higher education for persons with benchmark disabilities. The Department of Empowerment of Persons with Disabilities, under the Ministry of Social Justice and Empowerment, oversees the implementation of this law.



Fig. 4.3.8: PwD accessibility in workspace

Summary

- Workers must follow all safety instructions and keep their workspace clean and hazard-free.
- Personal hygiene and avoiding harmful substances are important for health at work.
- Understanding and using Personal Protective Equipment (PPE) is essential in different tasks.
- Hazards must be reported and managed quickly to prevent accidents and injuries.
- Staff must know how to give basic first aid during workplace emergencies.
- Safe disposal of waste and regular maintenance of tools must be followed.
- Mock drills and evacuation steps help prepare everyone for emergencies.
- Everyone must know emergency reporting steps and the organisation's conduct rules.
- Effluent Treatment Plants must be used properly to meet environmental safety norms.
- Gender equality and respect for all must be practiced and promoted at the workplace.
- Tools and stitching equipment must be handled with care to avoid injuries.
- Inclusive practices should support the needs of women and persons with disabilities.

Exercise

Multiple-choice Question:

1. What is the main purpose of using PPE in the workplace?
 - a. To decorate the uniform
 - b. To avoid doing difficult tasks
 - c. To protect the worker from injury
 - d. To look professional

2. What should be done immediately when a workplace hazard is found?
 - a. Inform a friend
 - b. Continue working
 - c. Report it to the supervisor
 - d. Wait for someone else to notice

3. What is the purpose of conducting a mock drill?
 - a. Practice routine office tasks
 - b. Train for emergency situations
 - c. Teach new stitching methods
 - d. Test workers' productivity

4. Why is gender sensitisation important at the workplace?
 - a. To reduce work pressure
 - b. To follow traditional roles
 - c. To ensure equality and safety
 - d. To improve fashion skills

5. How can safe stitching tool use be ensured?
 - a. By working faster
 - b. By using them roughly
 - c. By following safety instructions
 - d. By lending them freely

Descriptive Questions:

1. What are the basic steps to keep a workplace safe and healthy?
2. How should a person respond to an accident at the workplace?
3. What are the correct ways to use and maintain PPE?
4. How do Effluent Treatment Plants help the environment?
5. What is the importance of treating all genders equally at work?

5. Select Fabrics, Trims and Accessories as per Specific Product Category



Unit 5.1 - Fabric and Accessories Selection

Unit 5.2 - Product Construction and Techniques



Key Learning Outcomes

By the end of this module, the participants will be able to:

1. Describe how to identify the market sources for fabrics and accessories effectively.
2. Prepare for selecting suitable fabrics and accessories based on the specific product type.
3. Outline the method to assess fabric properties and usability for the intended purpose.
4. Elaborate on how to choose fabrics considering both design requirements and cost efficiency.
5. Elucidate the key criteria for selecting appropriate trims and accessories.
6. Describe the steps involved in identifying the construction process of a product.
7. Outline how to analyse the need for specific embroidery techniques in a design.
8. Elucidate the identification process for appropriate dyeing and printing techniques.

UNIT 5.1: Fabric and Accessories Selection

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe market identification for fabric and accessories
2. Prepare for fabric and accessories selection by product
3. Outline the assessment of fabric usability and properties
4. Elaborate on fabric selection based on design and cost
5. Elucidate trims and accessories selection criteria

5.1.1 Market Identification for Fabric and Accessories

Market identification for fabric and accessories involves defining the specific group of consumers who are most likely to purchase your products. This requires thorough research into demographics, psychographics, and purchasing behaviours to understand their needs, preferences, and price sensitivities, enabling targeted product development and marketing strategies.



Fig. 5.1.1: Market identification parameters

- **Know Market Names and Availability**

Knowing market names and availability helps in locating the right vendors for fabrics and accessories quickly. It ensures that sourcing is done efficiently without production delays.

Data Collection

- Secondary Data Collection
- Primary Interviews

Interpretation and Presentation

- Analysis & Interpretation
- Insights
- Presentation & Reporting



Market Data Analysis and Statistical Model

- Market Trends
- Market Sizing and Analysis
- Data Triangulation & Validation

Fig. 5.1.2: Research parameters for finding market names

• **Stay Updated on Fabric Trends**

Staying updated on fabric trends allows professionals to select materials that meet current fashion expectations. This supports better customer satisfaction and keeps the brand competitive.

Global Performance Fabric Market

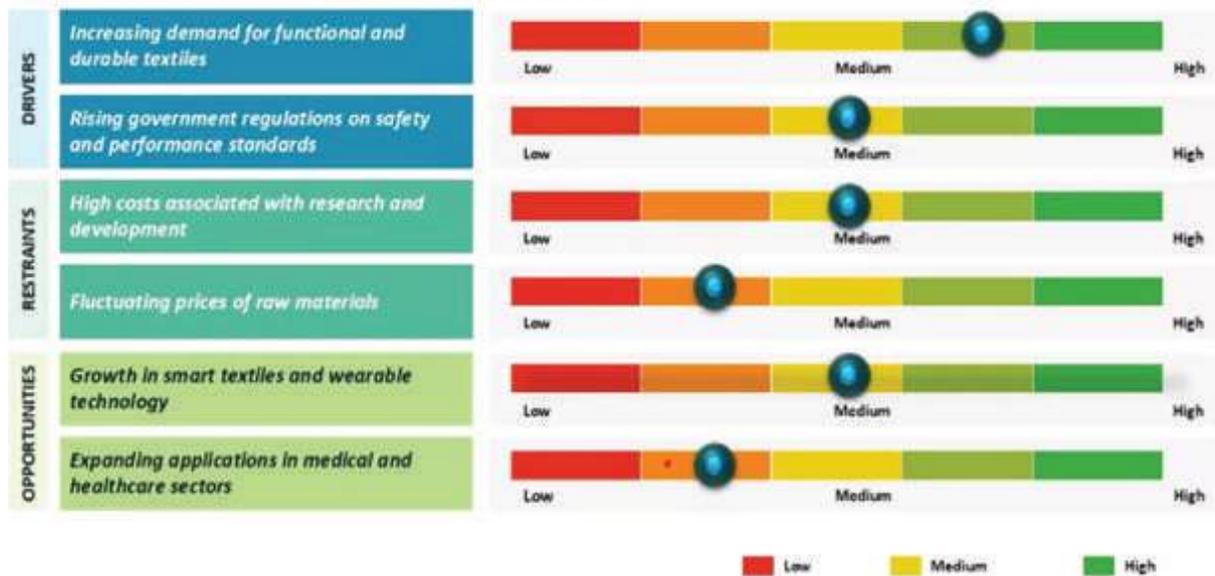


Fig. 5.1.3: Global fabric market milestones

- **Select Market-Available Friendly Fabrics**

Choosing fabrics that are easily available in the market helps maintain cost control and timely production. It reduces the risk of sourcing issues during large orders.

Fabric Name	Type and Details	Images
Cotton	Natural; soft, breathable; used in daily wear. Substitutes: cotton blends, bamboo.	
Polyester	Synthetic; durable, low-cost; used in sportswear. Substitutes: nylon, poly-cotton.	
Rayon	Semi-synthetic; soft, drapery; used in dresses. Substitutes: modal, lyocell.	 <p>Viscose rayon Modal rayon Lyocell rayon</p>
Denim	Cotton-based; sturdy, stylish; used in jeans. Substitutes: twill, chambray.	
Linen Blends	Natural blend; cool, textured; used in summer wear. Substitutes: ramie, cotton-linen.	
Georgette	Blended; light, flowy; used in ethnic wear. Substitutes: chiffon, crepe.	

Fabric Name	Type and Details	Images
Crepe	Blended; textured, flexible; used in formals. Substitutes: georgette, viscose.	
Poplin	Cotton/poly; crisp, durable; used in shirts. Substitutes: broadcloth, percale.	
Twill	Cotton/poly; strong, heavy; used in pants. Substitutes: denim, drill.	

Table 5.1.1: Market-available friendly fabrics

- **Coordinate Closely with Sourcing Department**

Close coordination with the sourcing department ensures fabric choices align with availability, delivery timelines, and budgets. This teamwork avoids last-minute shortages and maintains production flow.



Fig. 5.1.4: Functions of sourcing department

- **Keep Substitutes for Unavailable Fabrics**

Keeping substitutes for key fabrics ensures design continuity in case of stockouts. It also allows flexibility during emergencies without compromising quality.

Original Fabric	Substitute(s)	Reason for Substitution
Cotton	Cotton blends, bamboo fabric	Similar softness and breathability; blends are more affordable.
Polyester	Nylon, poly-cotton blends	Comparable strength, stretch, and durability.
Rayon/Viscose	Modal, lyocell	Soft feel, good drape, and eco-friendly properties.
Denim	Twill, chambray	Similar weave, structure, and appearance.
Linen	Ramie, cotton-linen blends	Natural texture with improved strength and cost-efficiency.
Georgette	Chiffon, crepe	Lightweight and flowy with similar drape.
Crepe	Georgette, viscose	Similar texture and flexibility for draping.
Poplin	Broadcloth, percale	Smooth surface with similar strength and crispness.

Original Fabric	Substitute(s)	Reason for Substitution
Twill	Denim, drill	Durable and heavy-duty fabric alternatives.
Interlock Knit	Jersey, rib knit	Comparable stretch and comfort for active wear/innerwear.

Table 5.1.2: Substitute fabrics

- **Understand Fabric Types and Experience**

Understanding different fabric types and handling experience helps in selecting the right materials for each product. It ensures proper texture, performance, and end-use suitability.

Fabric Type	Needle Type & Size	Sewing Machine Foot	Fabric Marker	Thread Type	Other Tips
Cotton (quilting)	Universal 80/12	Standard foot	Washable marker	Cotton or polyester thread	Pre-wash fabric to prevent shrinkage.
Jersey/Knits	Ballpoint 70/10 or 80/12	Walking foot	Air-erase marker or tailor's chalk	Polyester thread	Use stretch stitches or a serger for a durable finish.
Denim	Denim/Jeans 90/14 or 100/16	Jeans foot or topstitching foot	Chalk pencil	Heavy-duty polyester or topstitch thread	Use heavy-duty thread for seams.
Silk/Chiffon	Microtex 60/8 or 70/10	Straight stitch foot	Disappearing ink pen	Fine polyester or silk thread	Use a fine thread and sharp scissors for cutting.
Fleece	Universal 90/14	Walking foot	Tailor's chalk	Polyester thread	Lower tension slightly to prevent puckering.
Leather/Vinyl	Leather needle 90/14 or 100/16	Teflon foot or roller foot	Chaco liner	Nylon or polyester thread	Use clips instead of pins to avoid puncturing fabric.
Linen	Universal 80/12 or 90/14	Standard foot	Water-soluble marker	Cotton or polyester thread	Pre-wash and iron before cutting to minimize fraying.
Tulle	Microtex 60/8	Straight stitch foot	Washable marker or no marker	Fine polyester thread	Use a stabilizer to prevent shifting while sewing.

Wool	Universal 90/14	Standard foot	Tailor's chalk	Wool or polyester thread	Press seams open using a pressing cloth to avoid shine.
Stretch Fabrics	Stretch needle 75/11 or 90/14	Walking foot	Air-erase marker	Stretch or polyester thread	Avoid pulling the fabric while sewing to maintain stretch.
Velvet	Microtex 70/10	Walking foot or straight stitch foot	Chalk pencil	Polyester thread	Sew in the direction of the nap and use a pressing cloth.

Fig. 5.1.5: Fabric guide reference tool

5.1.2 Fabric and Accessories Selection by Product

Fabric and accessories selection by product involves carefully choosing materials that align with the specific design, functionality, and aesthetic requirements of each individual item. This process considers factors such as durability, drape, texture, colour, and cost, ensuring that the chosen components enhance the product's overall appeal and performance.



Fig. 5.2.6: Fabric accessories

- **Select Fabrics by Technical Attributes**

Selecting fabrics based on technical features like strength, stretch, or breathability ensures product performance. It supports the functional needs of the final garment.

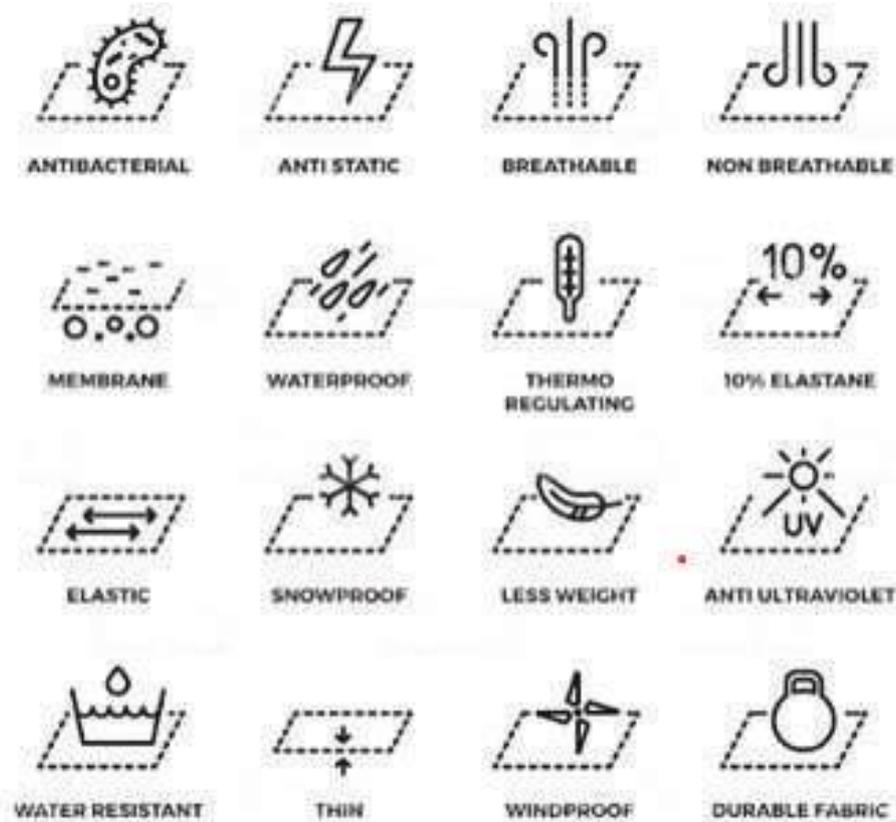


Fig. 5.1.7: Fabric technical properties

- **Choose Based on End Usage**

Fabrics must be chosen depending on whether the garment is for casual, formal, or active wear use. This helps in meeting customer expectations and garment durability.

Household	Geotextiles	Industrial/Military	Health Care
Aprons	Soil stabilization	Coated fabrics	Shoe covers
Tea and coffee bags	Drainage	Clean room apparel	Lens tissue
Tablecloths	Road and railroad beds	Air conditioning filters	Surgical: caps, gowns, masks,
Ironing board pads	Sedimentation and erosion	Military clothing	Diapers
Fabric softener sheets	Pond liners	Conveyor belts	Bandages, tapes

Fig. 5.1.8: Fabric end usage parameters

- **Select Trims for Aesthetic Function**

Trims such as buttons, laces, and zippers enhance the garment's appearance and must match the design theme. The right trim selection adds value to the product.



Fig. 5.1.9: Fabric trims

- **Understand Customer Fabric Requirements Clearly**

Understanding client expectations regarding texture, comfort, and appearance is crucial for fabric selection. It ensures the final product meets user preferences.

Customer Needs (WHATs)	Design Requirements (HOWs)
Hairiness	Proper ratio of filaments
High Abrasive Resistance	Chemical improvement in the values of the dry and wet crease resistance
Bending	Avoid yarn irregularities
Strength	Reduction in moisture in the bleached jute
Continuous Market Supply	Proper utility support
	Digitally data collection
	Time to time communication with customer
Shinning Yarn	Improvement of the physic-chemical properties
No Broken Yarn	Cooling oil
Cross Winding	Travers guide
Tight Winding	Belt and pulley
	Trained production officers
	Closed supervision by production officers
Package Weight	Travers guide

Fig. 5.1.10: Fabric requirements chart

- **Match Fabric with Design Needs**

Fabric must support the drape, fit, and construction of the intended design. This alignment helps in maintaining the designer's vision without compromise.

Fabric Name	Design Need	Reason for Match
Cotton	Casualwear, shirts, kids wear	Breathable, soft, easy to stitch and print.
Denim	Structured garments like jeans or jackets	Heavyweight and durable with a defined shape.
Chiffon	Flowy dresses, layered garments	Lightweight, sheer, and excellent drape.
Poplin	Uniforms, fitted shirts	Crisp, smooth finish and holds structure well.
Jersey Knit	T-shirts, active wear	Stretchy and comfortable for movement.
Silk	Luxury dresses, blouses	Elegant drape and natural sheen.
Crepe	Draped kurtis, formalwear	Slightly textured with good fall and flexibility.
Twill	Pants, skirts, workwear	Strong weave and medium structure, good for shaping.
Linen	Summer wear, loose shirts	Breathable with a natural, textured look, ideal for relaxed fits.
Georgette	Ethnic wear, sarees, blouses	Light, slightly textured, and holds layered designs well.

Table 5.1.3: Matching fabric for design needs

- **Choose Budget-Friendly Fabric Options**

Selecting cost-effective fabric options ensures price competitiveness in the market. This is important for balancing quality and affordability.

Grade	Typical Materials	General Qualities
Grade A	Synthetics or basic blends	Budget-friendly, limited durability
Grade B-C	Cotton blends, chenille	Improved durability and more design variety
Grade D-E	Wool, linen, performance fabrics	High wear resistance, richer textures
Grade F and up	Velvet, silk, designer fabrics	Premium, luxurious, long-lasting (but pricier)

Fig. 5.1.11: Fabric budget selection parameters

5.1.3 Assessment of Fabric Usability and Properties

Assessment of fabric usability and properties involves evaluating a fabric's performance characteristics, such as tensile strength, tear resistance, shrinkage, colourfastness, and drape, to determine its suitability for a specific end-use. This critical step ensures the chosen fabric will meet the required functional and aesthetic standards of the final product and customer expectations.

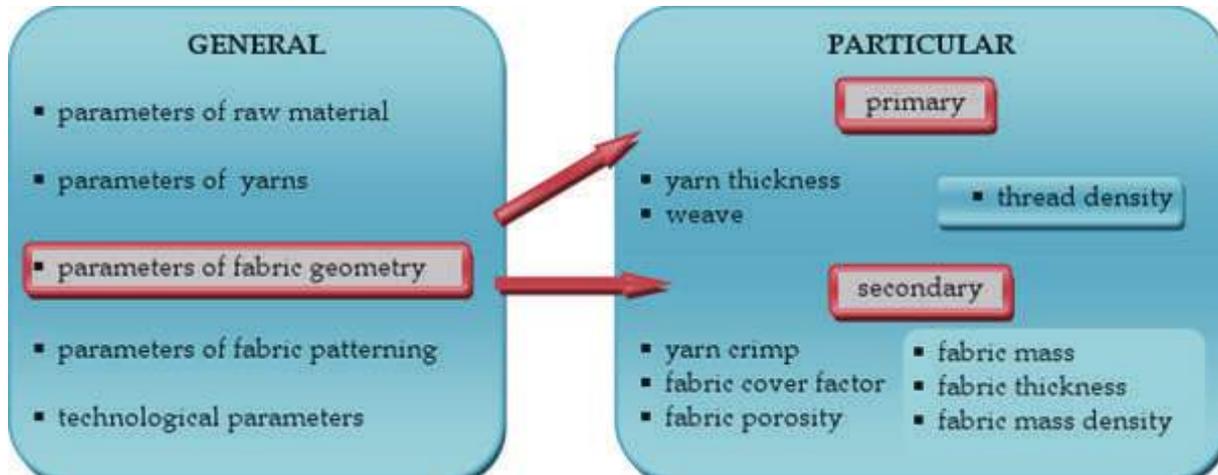


Fig. 5.1.12: Fabric usability properties

- **Assess Fabric Characteristics by Category**

Evaluating fabric categories like knits, wovens, or nonwovens helps determine their suitability for different products. This aids in function-specific selection.



Fig. 5.1.13: Fabric categories

- **Evaluate Machine and Fabric Compatibility**

Checking if the fabric suits the available machinery ensures smooth production without technical issues. It also prevents machine damage and improves efficiency.

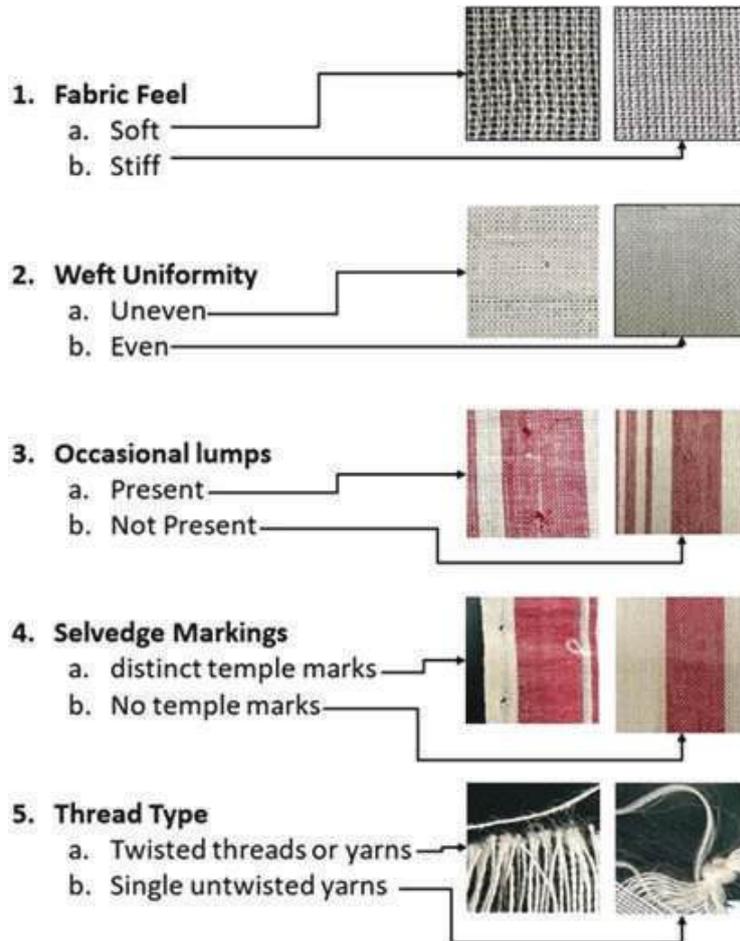


Fig. 5.1.14: Machine and fabric compatibility by categories

- **Understand Fabric Sewability and Testing**

Knowing how a fabric behaves during sewing and testing is vital for quality output. It minimises issues like puckering, tearing, or seam failure.

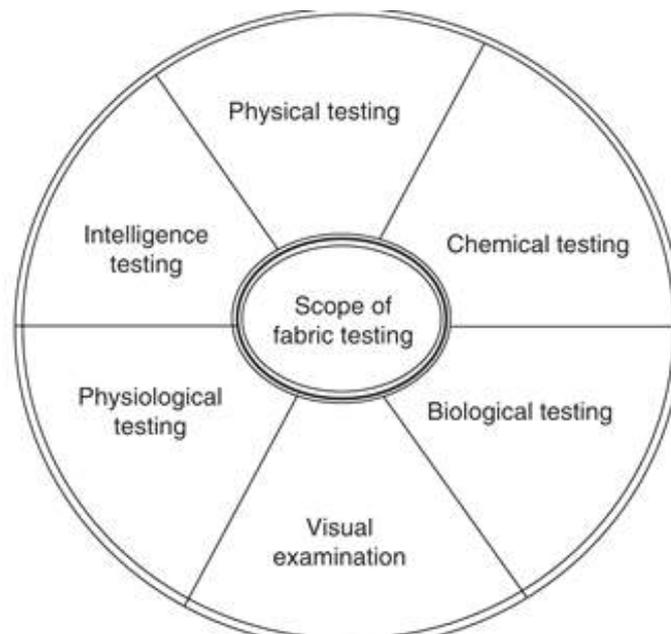


Fig. 5.1.15: Fabric testing before sewability

- Interpret Fabric Needs and Availability**

Analysing demand versus current market availability helps in planning procurement efficiently. It avoids supply gaps and ensures timely delivery.

PURPOSES	FCC FABRIC LICENSES	NTIA FABRIC LICENSES
PARTICIPATE IN AN FCC BDC BULK FABRIC CHALLENGE	YES	NO
PARTICIPATE IN AN FCC BDC BULK BROADBAND AVAILABILITY CHALLENGE	YES	NO
PARTICIPATE IN AN FCC BDC AVAILABILITY SUBMISSION	YES	NO
PARTICIPATE IN AN FCC EFFORT TO UPDATE AND VERIFY COMPLIANCE WITH CERTAIN HIGH-COST PROGRAM SUPPORT AND DEPLOYMENT OBLIGATIONS	YES	NO
PARTICIPATE IN AN NTIA BEAD ELIGIBLE ENTITY CHALLENGE PROCESS	NO	YES
PARTICIPATE IN TREASURY, USDA OR OTHER FBGA CHALLENGE PROCESS	NO	YES
PARTICIPATE IN AN FBGA BROADBAND GRANT PROGRAM AS A SUB-RECIPIENT, RECIPIENT OR INDIRECT RECIPIENT	NO	YES
OPPORTUNITY ANALYSIS ON NON-BEAD LOCATIONS TO EXPAND SERVICE TO	NO	NO
MARKETING AND SALES INITIATIVES	NO	NO
EXPANSION PLANNING AND NETWORK DESIGN	NO	NO
SYNCING WITH BILLING AND CUSTOMER DATABASES	NO	NO
PROVISIONING POTENTIAL CUSTOMER ADDRESSES	NO	NO

Fig. 5.1.16: Fabric availability assessment properties

- Analyse Fabric Use and Trends**

Studying fabric usage trends helps in forecasting future requirements and stocking accordingly. It supports proactive decision-making in sourcing and design planning.

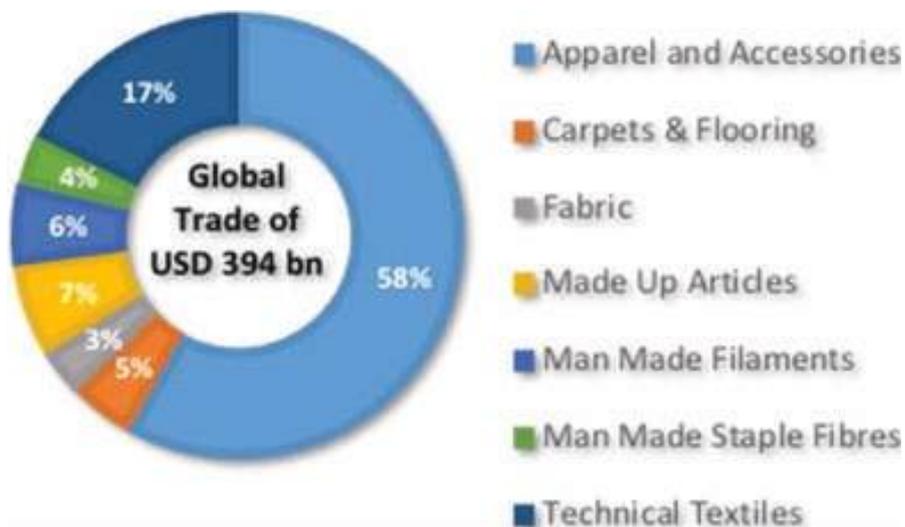


Fig. 5.1.17: Global fabric trends

5.1.4 Fabric Selection Based on Design and Cost

Fabric selection based on design and cost requires balancing aesthetic vision with budgetary constraints. This involves choosing materials that achieve the desired visual appeal, texture, and drape while remaining within the allocated financial parameters for production.

Key Action	Purpose/Benefit
Make Selections Considering Cost	Ensures the final product fits the price range while balancing creativity and commercial success.
Decide Based on Fabric Cost	Helps control pricing and profit margins without compromising on fabric quality.
Align Decisions with Sourcing Team	Prevents procurement issues by choosing fabrics that are both cost-effective and available.
Plan Fabrics and Trims Effectively	Supports smooth production and cost efficiency by ensuring timely availability of all required materials.
Evaluate Fabric Demand and Forecast	Avoids over-purchasing or shortages, leading to better inventory and budget management.
Document Past Fabric Usage Clearly	Aids in repeating successful choices and preventing past errors through informed decision-making.

Table 5.1.4: Fabric selection based on design and cost

5.1.5 Trims and Accessories Selection Criteria

Trims and accessories selection criteria involve carefully evaluating components like buttons, zippers, labels, and embellishments based on their functional purpose, aesthetic contribution, and material compatibility with the main fabric.

Material type	Sustainability factor	Examples
Fabric	<ul style="list-style-type: none"> Biodegradable Requires low water consumption 	<ul style="list-style-type: none"> Organic linen Tencel
Trims	<ul style="list-style-type: none"> Recyclability Ethical sourcing & manufacturing 	<ul style="list-style-type: none"> Locally manufactured fastenings Metal zippers
Packaging & Labeling	<ul style="list-style-type: none"> Eliminate excessive packaging Use of recycled paper 	<ul style="list-style-type: none"> Digital labels Minimalist packaging
Accessories	<ul style="list-style-type: none"> Use of natural materials Minimize harmful coating 	<ul style="list-style-type: none"> Wooden buttons Eco-friendly accessories
Padding & Insulation	<ul style="list-style-type: none"> Opt for animal friendly components Choose recycled materials 	<ul style="list-style-type: none"> Wool insulation Synthetic insulation
Threading & sewing	<ul style="list-style-type: none"> Ethical manufacturing practices Add text here 	<ul style="list-style-type: none"> Biodegradable threads Polyester threads

Fig. 5.1.18: Fabric and accessories selection criteria

Trims and accessories selection criteria ensures these elements enhance the product's design, durability, and overall market appeal while aligning with cost and production requirements.

Key Action	Purpose/Benefit
Select Trims for Aesthetic Function	Enhances the visual appeal and reinforces brand identity, adding value to the final garment.
Discuss Fabric with Team Members	Encourages collaboration across departments, ensuring alignment and early resolution of fabric concerns.
Keep Substitutes for Unavailable Fabrics	Maintains production flow by having backup options ready in case of stock issues.
Correct Minor Fabric Quality Issues	Improves product quality and reduces waste by fixing small defects using simple corrective techniques.

Table 5.1.5: Trims and accessories selection criteria

5.1.5 Trims and Accessories Selection Criteria

Trims and accessories selection criteria involve carefully evaluating components like buttons, zippers, labels, and embellishments based on their functional purpose, aesthetic contribution, and material compatibility with the main fabric.

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Packaging & Labeling	<ul style="list-style-type: none"> Eliminate excessive packaging Use of recycled paper 	<ul style="list-style-type: none"> Digital labels Minimalist packaging
Accessories	<ul style="list-style-type: none"> Use of natural materials Minimize harmful coating 	<ul style="list-style-type: none"> Wooden buttons Eco-friendly accessories
Padding & Insulation	<ul style="list-style-type: none"> Opt for animal friendly components Choose recycled materials 	<ul style="list-style-type: none"> Wool insulation Synthetic insulation
Threading & sewing	<ul style="list-style-type: none"> Ethical manufacturing practices Add text here 	<ul style="list-style-type: none"> Biodegradable threads Polyester threads

Fig. 5.1.18: Fabric and accessories selection criteria

Trims and accessories selection criteria ensures these elements enhance the product's design, durability, and overall market appeal while aligning with cost and production requirements.

UNIT 5.2: Product Construction and Techniques

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe product construction process identification.
2. Outline embroidery technique requirement analysis.
3. Elucidate applicable dyeing and printing process identification.

5.2.1 Product Construction Process Identification

Product construction process identification involves mapping out the precise sequence of steps required to assemble a product, from initial cutting to final finishing. This detailed breakdown ensures efficiency, quality control, and the optimal utilisation of machinery and labour throughout the manufacturing journey.

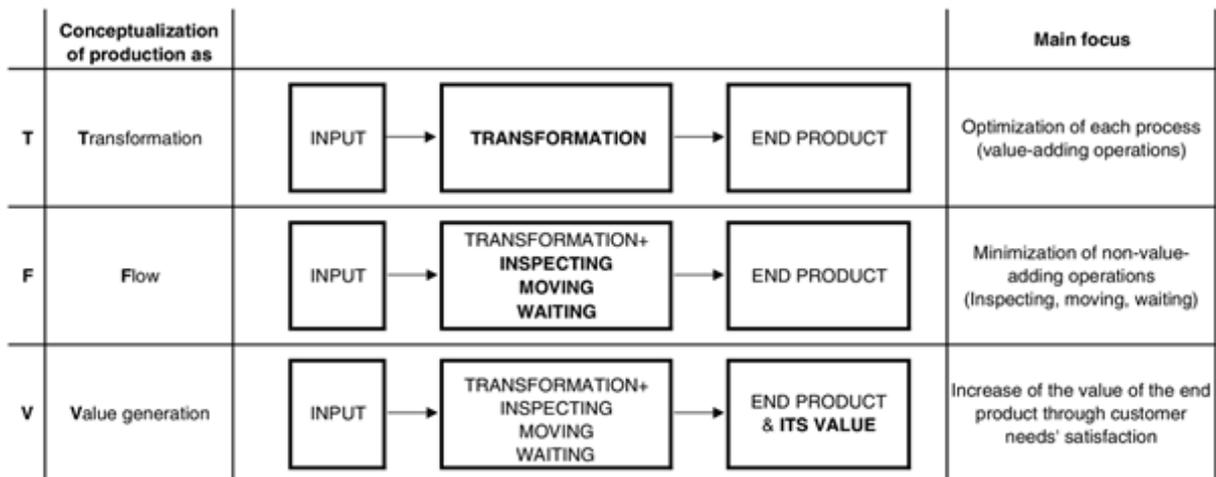


Fig. 5.2.1: Product construction process identification flow

- **Understand Fabric Types and Experience**

Knowing how different fabrics behave helps in choosing suitable construction techniques. This understanding is crucial for garment structure and durability.

- **Evaluate Machine and Fabric Compatibility**

Machines must match the fabric type for proper stitching and finishing. Compatibility ensures production speed and product quality.

- **Document Past Fabric Usage Clearly**

Keeping records of how fabrics performed in previous products guides future design and manufacturing choices. It helps improve consistency and reduce errors.

5.2.2 Embroidery Technique Requirement Analysis

Embroidery technique requirement analysis involves thoroughly evaluating the design's complexity, desired aesthetic, and production volume to select the most appropriate method, whether it be hand, machine, or specialised digital embroidery.

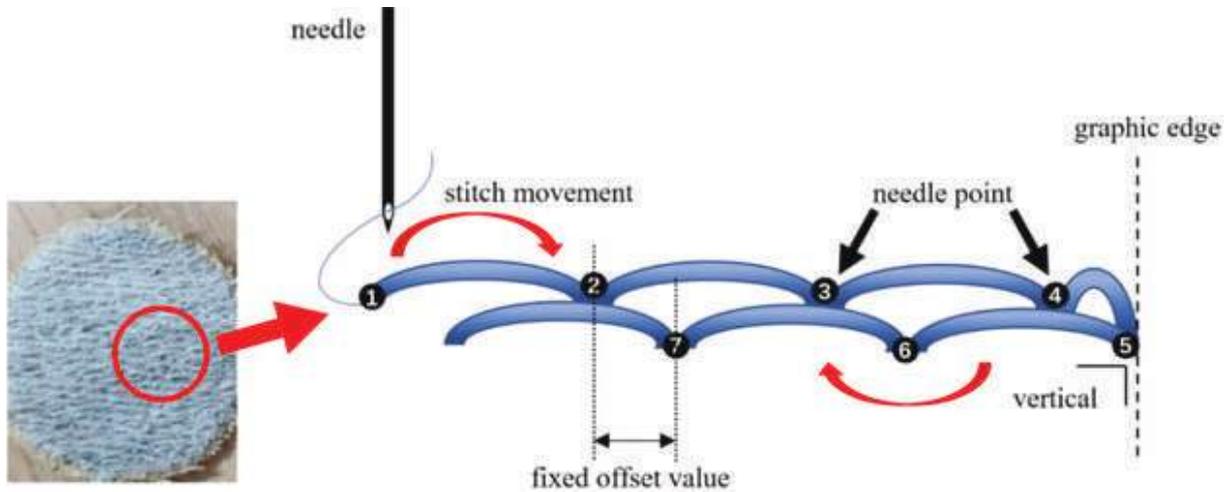


Fig. 5.2.2: Embroidery technique requirement analysis points

This embroidery technique requirement analysis considers thread types, stitch density, and fabric suitability to ensure the final embroidered product achieves the intended visual effect and durability.

- **Understand Customer Fabric Requirements Clearly**

Before planning embroidery, it's important to know what fabric the customer expects. This ensures the embroidery is appropriate in weight, look, and feel.

- **Match Fabric with Design Needs**

Not all fabrics are suitable for detailed embroidery. Matching ensures the fabric can support the technique without puckering or tearing.

5.2.3 Applicable Dyeing and Printing Process Identification

Applicable dyeing and printing process identification involves determining the most suitable colouration techniques based on the fabric's fibre content, desired colourfastness, design intricacy, and production scale.

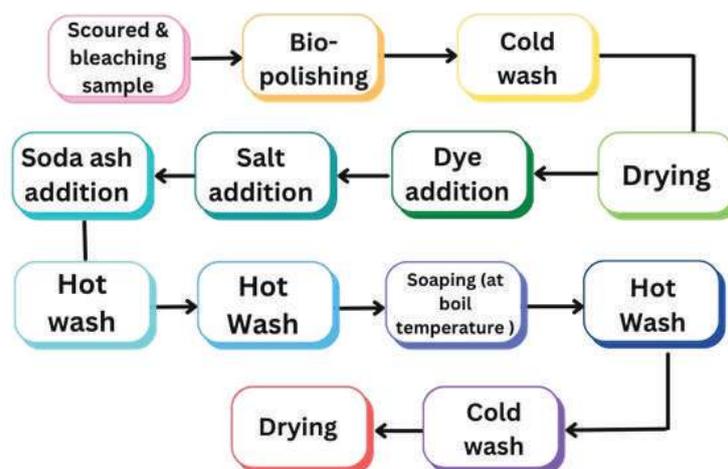


Fig. 5.2.3: Fabric dyeing and printing flowchart

This includes evaluating options like direct printing, resist dyeing, or reactive dyeing to achieve the required aesthetic and performance characteristics for the finished textile.

- **Understand Fabric Sewability and Testing**

A fabric's response to dyes and prints depends on its structure and finish. Testing helps avoid colour bleeding, shrinkage, or uneven printing.

- **Know Relevant Processing Techniques**

Choosing the right dyeing and printing methods like block printing, screen printing, or digital ensures vibrant and lasting results. It aligns production with design vision.

- **Correct Minor Fabric Quality Issues**

Dyeing or printing can help mask small defects in fabric or enhance its appearance. This improves the fabric's usability without discarding it.



Fig. 5.2.4: Fabric dyeing and printing

Summary

- Market identification includes understanding fabric trade names and availability.
- Keeping up with fabric trends helps in choosing the right materials.
- Close coordination with the sourcing department ensures timely availability.
- Substitutes should be planned in case of fabric or trim shortages.
- Technical attributes like yarn type and fabric construction guide selection.
- End usage factors such as comfort and durability are key in fabric choice.
- Trims must align with both design aesthetics and functional requirements.
- Fabric usability depends on compatibility with machinery and sewing processes.
- Cost-effective options must be selected within budget constraints.
- Customer needs and design ideas influence material choices.
- Product construction planning depends on fabric type and past usage experience.
- Suitable embroidery, dyeing, and printing processes are chosen based on fabric behaviour.

Exercise

Multiple-choice Question:

1. What is an important consideration in fabric market identification?
 - a. Product price
 - b. Fabric availability and trade names
 - c. Store location
 - d. Number of workers
2. Which factor is important when choosing a fabric for daily wear?
 - a. Glossy finish
 - b. High production cost
 - c. Moisture transfer capability
 - d. Decorative value only
3. Which department should be consulted to ensure fabric availability?
 - a. Finance
 - b. Sales
 - c. Sourcing
 - d. HR
4. What is a key reason for keeping fabric substitutes?
 - a. To match new trends
 - b. To reduce workload
 - c. To manage unavailability
 - d. To simplify packaging
5. Why is it important to analyse machine compatibility?
 - a. For staff comfort
 - b. For quick packaging
 - c. For smooth production
 - d. For marketing purposes

Descriptive Questions:

1. Explain how market trends help in fabric selection.
2. Describe how to select trims for both function and aesthetics.
3. What factors should be considered for fabric usability?
4. How can design and cost affect fabric choice?
5. Mention the steps to identify suitable embroidery techniques.

6. Abide by Industry, Regulatory, and Organisational Mandates, while Integrating Environmentally Friendly Practices



Unit 6.1 - Ethics and Workplace Responsibilities

Unit 6.2 - Professional Conduct and Discipline

Unit 6.3 - Green Practices and Sustainability



Key Learning Outcomes

By the end of this module, the participants will be able to:

1. Describe the significance of maintaining an ethical approach and strong governance in the workplace.
2. Elaborate on how practicing values and ethics contributes to a responsible and respectful work culture.
3. Outline the key legal, regulatory, and ethical compliance norms that must be followed.
4. Elucidate the specific regulations required by different customers and countries.
5. Prepare to promptly report any deviations or non-compliance issues to the appropriate authorities.
6. Describe individual accountability and how to follow the established reporting structure.
7. Outline how to seek clarification on policies through authorised personnel.
8. Elaborate on the application of organisational rules, guidelines, and standard procedures.
9. Describe why being punctual and maintaining attendance is important for personal and team productivity.
10. Outline the importance of following organisational rules and performance standards.
11. Elucidate the correct way to seek clarification on policies from supervisors when needed.
12. Describe how to optimise the use of materials and resources during operations.
13. Outline the safe and proper methods for handling and storing waste.
14. Elaborate on techniques for using resources efficiently to reduce waste and cost.
15. Elucidate how to assess energy-saving practices and their impact in apparel production.
16. Prepare to comply with greening standards and sustainability guidelines in the workplace.

UNIT 6.1: Ethics and Workplace Responsibilities

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe the importance of an ethical approach and governance.
2. Elaborate on the benefits of values and ethics.
3. Outline legal, regulatory, and ethical compliance requirements.
4. Elucidate customer and country specific regulations.
5. Prepare to report deviations to authorities.
6. Describe personal responsibility and reporting structure.
7. Outline clarifying policies with authorised personnel.
8. Elaborate on applying organisational guidelines and procedures.

6.1.1 Ethical Approach and Governance Importance

An ethical approach and strong governance are paramount for the long-term sustainability and reputation of any organisation. They establish a framework of integrity, transparency, and accountability, guiding all business decisions and interactions. This foundation builds trust with stakeholders, mitigates risks, and fosters a positive organisational culture.

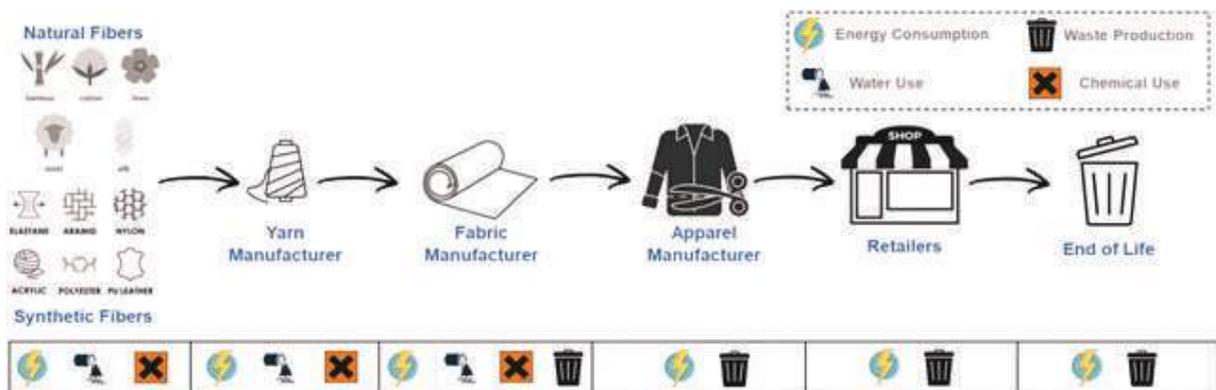


Fig. 6.1.1: Green practices flowchart sample in apparel, home furnishing, and made off sector

- **Promote Sustainable and Green Practices**

Encouraging eco-friendly methods like using organic fabrics or recycling reduces the environmental impact of fashion production. It reflects a company's commitment to ethical responsibility.

- **Support Organisational Green Performance Improvements**

Improving green performance includes reducing water usage, energy consumption, and chemical waste. This leads to long-term cost savings and enhances brand image.

6.1.2 Benefits of Values and Ethics

Adhering to strong values and ethics offers significant benefits, including enhanced brand reputation, increased customer loyalty, and improved employee morale. Ethical conduct attracts and retains talent, reduces legal and regulatory risks, and ultimately contributes to sustainable financial performance. They serve as a moral compass, guiding an organisation through challenging decisions and fostering a responsible corporate identity.

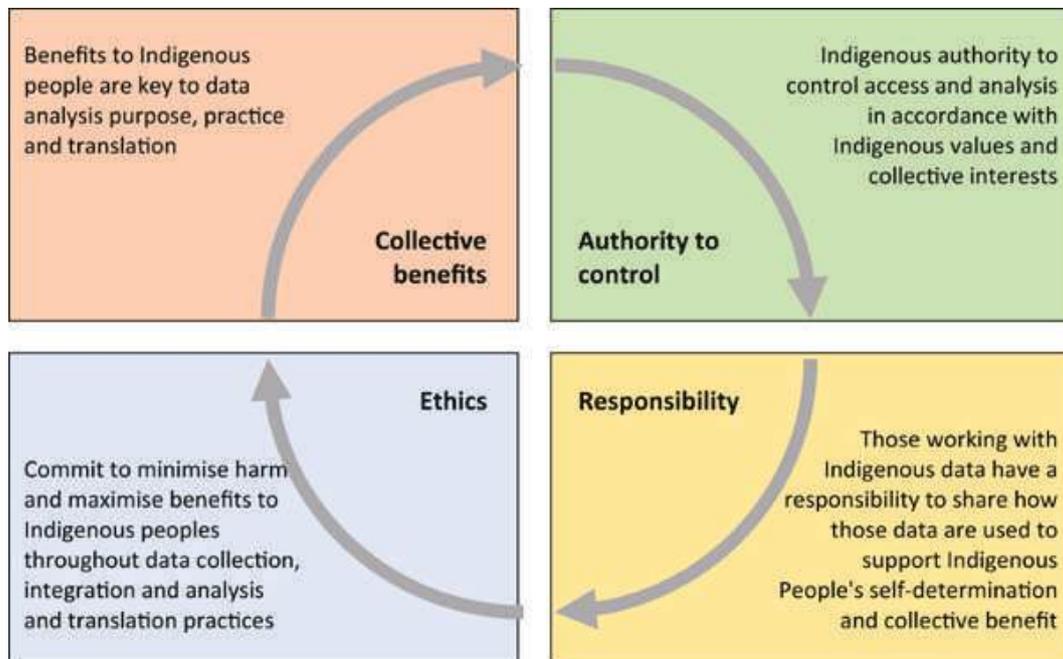


Fig. 6.1.2: Benefits of values and ethics

- **Replace Wasteful Processes with Sustainability**

Replacing outdated practices with sustainable alternatives improves efficiency and reduces material wastage. It also builds trust among eco-conscious customers.

- **Solve Problems and Meet Deadlines**

Ethical work culture promotes accountability, which helps teams resolve issues and complete work on time. It also improves team reliability and professionalism.

6.1.3 Legal, Regulatory, and Ethical Compliance

Legal, regulatory, and ethical compliance is a multifaceted obligation ensuring that an organisation operates within the bounds of all applicable laws, industry-specific regulations, and its own internal ethical principles. This involves rigorous adherence to standards that govern everything from environmental protection and labour practices to financial reporting and data privacy. Proactive compliance not only prevents penalties and reputational damage but also reinforces a commitment to responsible business conduct.



Fig. 6.1.3: Applications of regulatory and ethical compliance

- **Follow Organisational and Regulatory Standards**

Adhering to labour laws, safety norms, and environmental guidelines ensures legal compliance. It protects both employees and the brand from penalties or shutdowns.

- **Interpret Manuals and Specifications Accurately**

Adhering to labour laws, safety norms, and environmental guidelines ensures legal compliance. It protects both employees and the brand from penalties or shutdowns.

6.1.4 Customer and Country Regulations

Understanding and adhering to customer and country-specific regulations is crucial for global businesses, particularly in the apparel and home furnishings sectors, to ensure product compliance and market access. This involves navigating diverse standards related to product safety, labelling requirements, chemical restrictions, and import/export regulations, which can vary significantly across different markets. Failing to comply can lead to product recalls, legal issues, and severe damage to brand reputation.

Regulation Area	Key Requirements	Examples by Country/Region	Consequences of Non-Compliance
Product Safety Standards	Items must be safe for end-users (no sharp parts, flammability controls, etc.)	US: CPSIA; EU: General Product Safety Directive; India: BIS safety norms	Product recalls, fines, market bans
Labelling Requirements	Clear labels with fibre content, care instructions, size, origin, and warnings	US: FTC labelling rules; EU: Regulation (EU) No 1007/2011; India: Legal Metrology Act	Import rejection, retailer penalties, legal notices
Chemical Restrictions	Restricted use of hazardous chemicals like azo dyes, lead, phthalates, formaldehyde	EU: REACH; US: California Prop 65; India: BIS and Environment Ministry guidelines	Bans on sale, health risk lawsuits, environmental penalties

Hazard Type	Examples	Reporting Action	Why It Matters
Electrical Hazards	Exposed wires, short circuits, power fluctuations	Inform safety or electrical maintenance team	Reduces risk of electric shock or fire
Obstructed Workspaces	Cluttered walkways, blocked emergency exits	Escalate to floor manager or safety head	Promotes safe movement and emergency preparedness

Table 6.1.2: Reporting unsafe equipment or hazards in apparel, home furnishings, and made-offs

6.1.6 Personal Responsibility and Reporting Structure

Personal responsibility in an organisation dictates that every employee is accountable for upholding ethical standards, adhering to policies, and ensuring their actions align with the company's values. A clear reporting structure then provides designated channels for employees to raise concerns, report non-compliance, or seek guidance without fear of reprisal. This dual emphasis on individual accountability and accessible reporting mechanisms fosters a culture of integrity and proactive problem-solving.

Manager Name :
Comments / Suggestion by Manager :
Corrective Action Preventive Action
Internal System Actions
Reports change / Activities Change Report
Signature of Manager

Fig. 6.1.5: Reporting structure format

- **Collaborate for Effective Sustainable Solutions**

Team collaboration encourages shared responsibility for reducing waste and improving designs. It strengthens workplace culture and innovation.

- **Maintain Design Files and Backups**

Keeping all digital design files and backups secure prevents data loss. It helps teams work efficiently and protects intellectual property.

6.1.7 Clarifying Policies with Authorised Personnel

Clarifying policies with authorised personnel ensures that all employees fully understand the organisation's guidelines, procedures, and ethical expectations. This process provides an opportunity for questions, addresses ambiguities, and confirms consistent interpretation and application of rules across the company. Regular communication and access to knowledgeable personnel are vital for maintaining compliance and preventing misunderstandings that could lead to non-adherence.



Fig. 6.1.6: Policy procedure template

- **Request Software Upgrades When Needed**

Designers must ask for updates in tools and software to improve productivity and meet modern requirements. Upgrades also help fix bugs and ensure smoother operations.

6.1.8 Applying Organisational Guidelines and Procedures

Applying organisational guidelines and procedures consistently is essential for maintaining operational efficiency, ensuring safety, and upholding quality standards. This involves all employees diligently following established protocols for tasks, decision-making, and communication in their daily work. Consistent application reduces errors, promotes a predictable work environment, and reinforces the company's commitment to its stated principles and objectives.

- **Use Appropriate Cleaning Techniques Properly**

Using correct cleaning methods for machines and tools ensures hygiene and long-term maintenance. It reduces wear and tear of expensive equipment.

- **Perform Scheduled Cleaning and Maintenance**

Regular upkeep prevents machine breakdowns and ensures uninterrupted production. It also supports workplace safety and efficiency.

- **Ensure Safe and Clean Environment**

Maintaining a tidy workspace reduces accidents and boosts team morale. A clean environment reflects professionalism and care.



Fig. 6.1.7: Organisational guidelines milestones

UNIT 6.2: Professional Conduct and Discipline

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe the importance of punctuality and attendance.
2. Outline adhering to organisational standards.
3. Elucidate seeking policy clarifications from supervisors.

6.2.1 Importance of Punctuality and Attendance

Punctuality and consistent attendance are fundamental pillars of professionalism and directly impact team productivity and operational efficiency. Arriving on time and being present as scheduled ensures seamless workflow, allows for timely completion of tasks, and demonstrates respect for colleagues and deadlines. These habits are crucial for maintaining a reliable and high-performing work environment such as follows:

- Punctuality shows professionalism and respect for others' time, creating a positive impression on colleagues and supervisors.
- Regular attendance ensures that work is completed consistently, helping the organisation meet its goals without unnecessary delays.
- Being on time every day helps maintain discipline and structure in daily routines, reducing chaos and confusion in the workplace.
- Punctual employees build trust with employers and co-workers, as they can be depended upon to fulfill responsibilities without reminders.
- Attendance affects team performance because one absent member can delay group tasks or burden others with extra work.
- Timely presence at work reduces stress from rushing or making up for lost time, allowing for a smoother and more productive day.
- Consistent attendance reflects a sense of reliability and personal responsibility, qualities highly valued in any professional setting.
- It improves workplace morale by encouraging fairness and commitment among all team members.
- Employers often consider punctuality and attendance as key criteria during performance reviews, promotions, or incentives.
- Good attendance habits demonstrate commitment to one's role and increase opportunities for long-term career advancement.



Fig. 6.2.1: Importance of workspace punctuality

6.2.2 Adhering to Organisational Standards

Adhering to organisational standards is crucial for maintaining consistency, quality, and a cohesive work environment. These standards encompass a wide range of expectations, from performance benchmarks and operational procedures to ethical conduct and communication protocols. Consistent adherence ensures that all activities align with the company's goals and values, fostering a professional and efficient workplace.



Fig. 6.2.2: Organisational attendance and punctuality policy handling template

Following the company's standard operating procedures ensures quality, safety, and consistency in production. It also helps in maintaining professionalism and accountability at all levels.

Aspect	Explanation	Impact of Compliance	Impact of Non-Compliance
Regular Attendance	Being present consistently during working hours	Ensures steady workflow, team reliability	Delays in production, burden on other team members
Punctuality	Reporting to work and meetings on time	Reflects professionalism and respect for schedules	Missed deadlines, poor impression on peers and supervisors
Shift Adherence	Following assigned shifts and break timings	Maintains operational efficiency and fairness	Operational disruption, potential HR action
Timely Reporting of Absence	Informing supervisors in advance when absent	Allows planning for backup or rescheduling	Sudden gaps in workflow, affects team coordination

Table 6.1.1: Importance of attendance and punctuality

6.2.3 Seeking Policy Clarifications from Supervisors

Seeking policy clarifications from supervisors is a proactive and responsible approach to ensure complete understanding and correct adherence to organisational guidelines.

Project Code here		Project Name Here	
Request for Clarification			
RFC No	<input type="text"/>	Date of Received	<input type="text"/>
Subject	<input type="text"/>		
Submitted by		Received by	
<input type="text"/>		<input type="text"/>	

Fig. 6.2.3: Policy clarification request form sample

When uncertain about a specific policy or procedure, employees should consult their direct supervisors to prevent misinterpretations and potential non-compliance. This open communication channel helps maintain operational consistency and minimises errors.

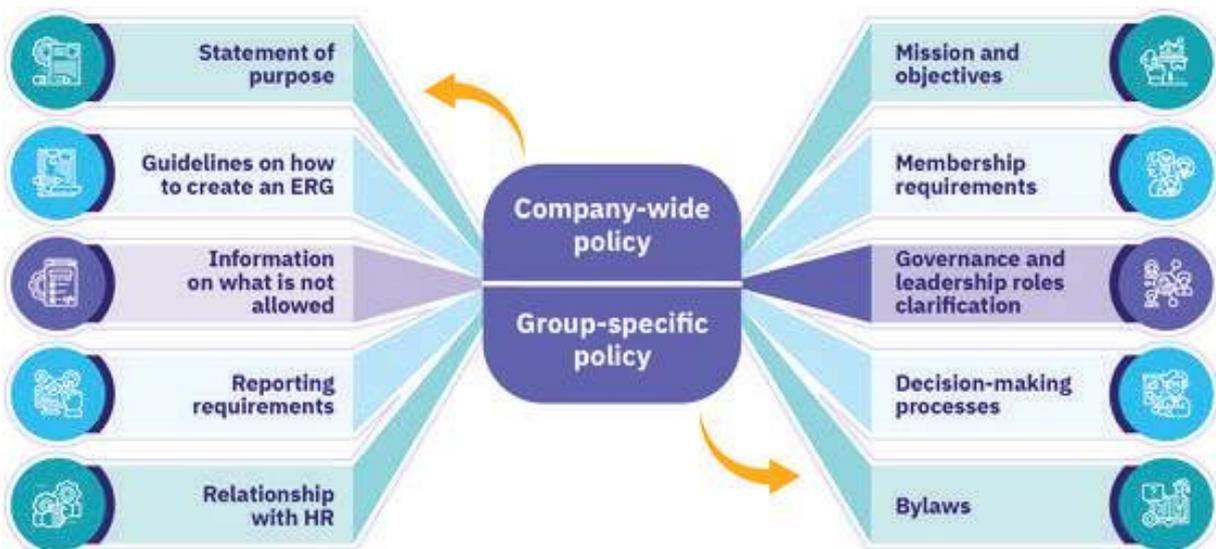


Fig. 6.2.4: Policy upgradation channels

- **Request Software Upgrades When Needed**

If existing tools are outdated or slow, seeking upgrades improves work efficiency and output quality. Timely updates also help in meeting technical requirements of new projects.

Aspect	Explanation	Impact of Compliance	Impact of Non-Compliance
Identifying Outdated Software	Recognising slow or incompatible tools used in daily tasks	Helps initiate upgrade process early	Reduced productivity, system crashes

Aspect	Explanation	Impact of Compliance	Impact of Non-Compliance
Requesting Upgrades	Formally asking IT or management for necessary updates	Improves tool performance and feature access	Delayed work or inability to meet project specs
Upgrades for New Projects	Ensuring tools meet technical needs of upcoming assignments	Enables smooth project execution	Risk of errors or inability to deliver as per requirements
Security and Compatibility	New versions patch bugs and improve system compatibility	Ensures data protection and better integration	Exposure to risks and outdated formats

Table 6.1.2: Requesting timely software tool upgrades

UNIT 6.3: Green Practices and Sustainability

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe optimising material and resource use.
2. Outline proper handling and storage of waste.
3. Elaborate on efficient use of resources.
4. Elucidate evaluating energy conservation in apparel.
5. Prepare to adhere to greening solutions standards.

6.3.1 Optimising Material and Resource Use

Optimising material and resource use involves implementing strategies to maximise the utility of raw materials, energy, and water while minimising waste throughout the production process. This includes precise cutting techniques in apparel manufacturing, recycling leftover fabrics, and using energy-efficient machinery. By doing so, businesses can significantly reduce their environmental footprint and lower operational costs.



Fig. 6.3.1: Methods to optimise resource uses

- **Promote Sustainable and Green Practices**

Using eco-conscious materials and reducing waste helps preserve natural resources. This approach also lowers costs and attracts sustainability-focused clients.



Fig. 6.3.2: Benefits of resource optimisation

6.3.2 Handling and Storing Waste Properly

Properly handling and storing waste is essential for environmental protection, workplace safety, and compliance with regulations. This involves segregating different types of waste, such as fabric scraps, hazardous chemicals, and general refuse, into designated containers.



Fig. 6.3.2: Apparel, home furnishing, and made off wastes

Secure and organised storage prevents contamination, reduces fire hazards, and prepares waste for appropriate disposal or recycling.



Fig. 6.3.3: Steps in waste handling

- **Replace Wasteful Processes with Sustainability**

Switching to efficient cutting techniques or digital designs reduces leftover fabric and trims. Proper storage of waste materials allows recycling or safe disposal.

- **Use Appropriate Cleaning Techniques Properly**

Following correct cleaning methods for fabric and work areas prevents contamination and damage. It ensures safe handling and responsible waste management.

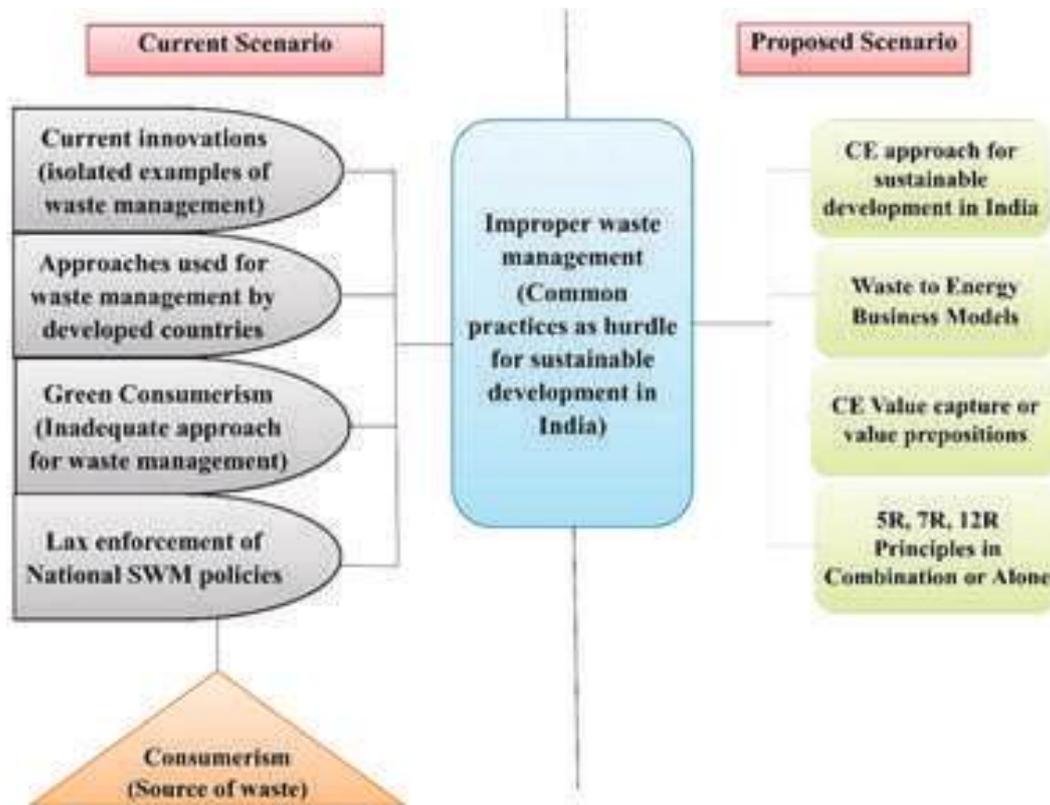


Fig. 6.3.4: Sustainable waste management practices

6.3.3 Efficient Use of Resources

Efficient use of resources entails making the most of all available inputs – be it raw materials, energy, water, or human capital – to achieve maximum output with minimal waste. This strategy involves careful planning, process optimisation, and adopting technologies that reduce consumption. Ultimately, it leads to cost savings, increased productivity, and a reduced environmental impact.

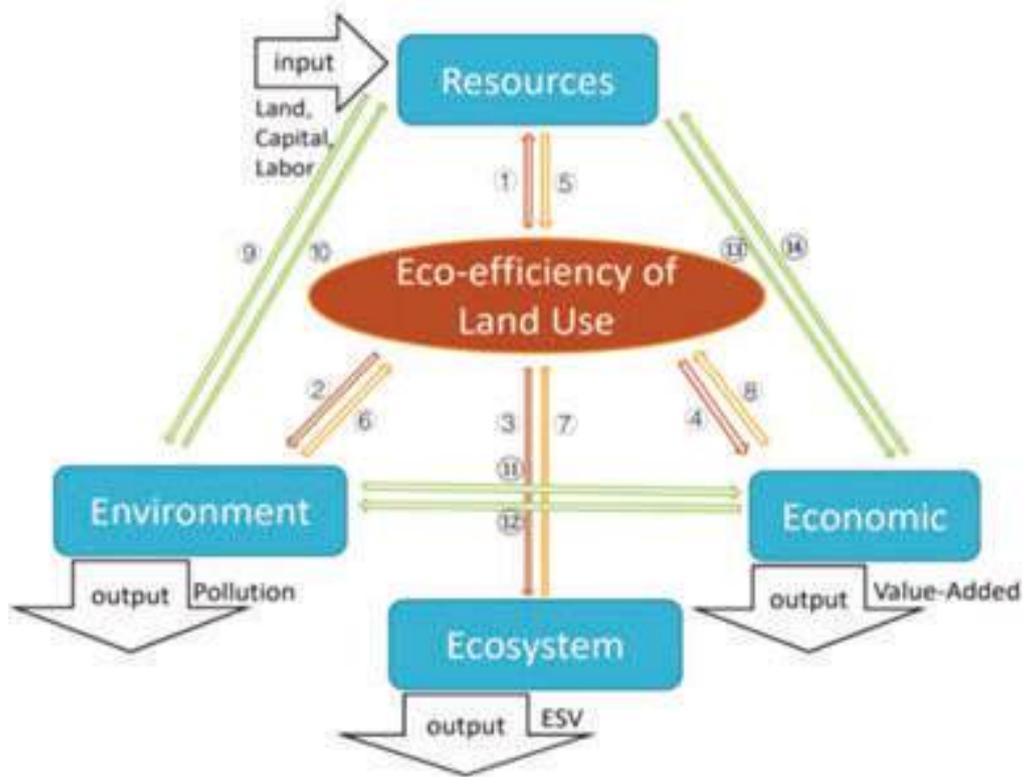


Fig. 6.3.5: Efficient use of resources

- **Ensure Safe and Clean Environment**

Managing energy, water, and raw materials wisely creates a productive and hazard-free workspace. It reflects organisational responsibility and operational excellence.

- **Request Software Upgrades When Needed**

Updated systems support faster design, sourcing, and communication. This leads to better use of digital resources and reduced errors.

6.3.4 Evaluating Energy Conservation in Apparel

Evaluating energy conservation in the apparel industry involves systematically assessing current energy consumption patterns and identifying opportunities for reduction throughout the manufacturing lifecycle. This includes analysing the energy efficiency of sewing machines, cutting equipment, and pressing units, as well as optimising lighting and HVAC systems.

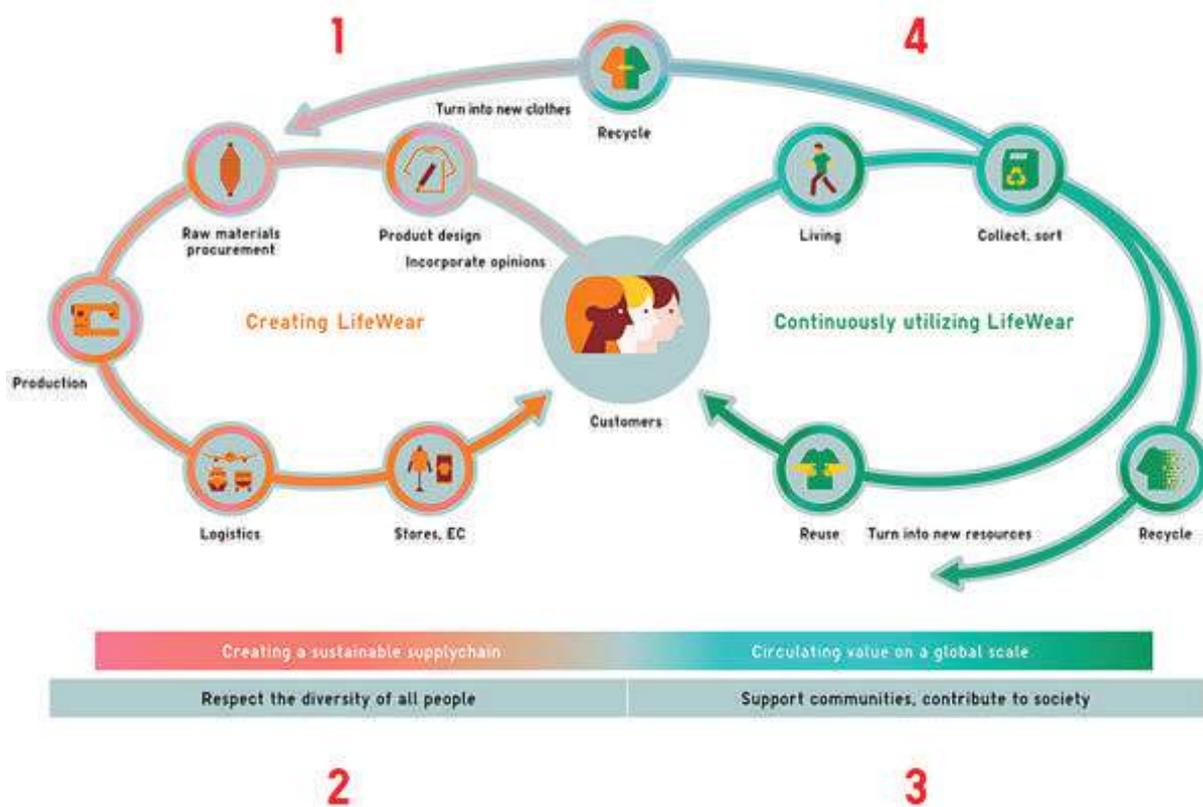


Fig. 6.3.6: Energy conservation in apparel process

Implementing energy-saving measures not only lowers operational costs but also significantly reduces the industry's carbon footprint.

Stage	Explanation	Impact of Implementation	Impact of Neglect
Energy Audit and Assessment	Reviewing energy consumption across all departments	Identifies major energy-consuming areas	Continued wastage due to unmonitored usage
Process Optimisation	Streamlining production processes to minimise energy use	Improves efficiency and lowers utility costs	High operational costs and inefficient workflows
Use of Energy-Efficient Equipment	Replacing old machines with energy-saving alternatives	Reduces energy bills and improves output quality	Increased breakdowns, higher energy usage
Lighting and HVAC Management	Controlling lighting and air systems based on need	Cuts unnecessary consumption and enhances comfort	Excess energy usage and higher maintenance costs

Table 6.3.1: Stages of energy conservation in apparel

6.3.5 Adhering to Greening Solutions Standards

Adhering to greening solutions standards involves implementing environmentally friendly practices and technologies that aim to reduce the ecological impact of industrial operations. This can include adopting renewable energy sources, utilising eco-friendly dyes and finishes, and minimising water consumption through advanced treatment systems. Compliance with these standards demonstrates a commitment to sustainability and responsible manufacturing.

Greening Practice	Description and Importance
Use of Renewable Energy	Switching to solar, wind, or other clean energy sources reduces carbon footprint and long-term energy costs.
Eco-Friendly Dyes and Finishes	Using natural or low-impact chemicals lowers pollution and ensures safer end products for users and workers.
Water-Saving Treatment Systems	Advanced water recycling and low-water dyeing techniques help conserve water in large-scale production.
Sustainable Raw Materials	Choosing organic cotton, bamboo, or recycled fibres supports environmental conservation and brand reputation.
Waste Reduction Techniques	Implementing fabric-cutting optimisation, recycling scraps, and reusing trims reduces landfill waste.
Low-Emission Transport Methods	Using greener logistics like bulk shipping or electric delivery vehicles minimises air pollution.

Table 6.3.2: Greening solutions standards in apparel, home furnishings, and made-off sectors

Summary

- Ethics and governance are important for building trust and responsibility in the workplace
- Values and ethics improve teamwork and decision-making
- Following laws, regulations, and compliance rules ensures safe and legal operations
- Employees should understand and respect customer and country-specific regulations
- Unsafe practices or deviations must be reported to the concerned authorities
- Everyone must understand their responsibilities and follow the reporting structure
- Employees should clarify rules and policies with authorised personnel when unsure
- Organisational policies and procedures must be followed in all tasks
- Being punctual and attending work regularly is a key part of professionalism
- Employees must understand and meet organisational expectations and standards
- Material and resources should be used efficiently to reduce waste
- Green practices and energy conservation help the apparel sector stay sustainable

Exercise

Multiple-choice Question:

1. What is a benefit of following workplace ethics?
 - a. Increased conflict
 - b. Higher penalties
 - c. Improved teamwork
 - d. Less communication

2. Who should you contact when you identify an unsafe condition?
 - a. A co-worker
 - b. External agency
 - c. Authorised personnel
 - d. Client

3. What should employees do if they are unsure about a policy?
 - a. Ignore it
 - b. Clarify with supervisor
 - c. Leave the task
 - d. Change the rule

4. Why is punctuality important in the workplace?
 - a. It increases leave days
 - b. It sets a bad example
 - c. It builds discipline
 - d. It delays operations

5. Which action supports green performance improvements?
 - a. Using extra resources
 - b. Ignoring procedures
 - c. Promoting sustainable practices
 - d. Avoiding teamwork

Descriptive Questions:

1. What is the importance of following ethical practices at work?
2. How can employees report a workplace safety issue?
3. Why should policies be clarified with supervisors?
4. How can resources be used efficiently in daily tasks?
5. What steps support energy conservation in apparel production?

7. Plan and Prepare Design Collections of Garments for a Season



Unit 7.1 - Design Research and Development Skills

Unit 7.2 - Fabric, Fibres, and Swatch Management

Unit 7.3 - Measurement, Draping, and Construction Techniques



Key Learning Outcomes

By the end of this module, the participants will be able to:

1. Describe the method to plan fashion market research using tools like fashion shows, trend magazines, and market data.
2. Research fashion trends through sources such as WGSN, catalogues, and forecast reports to gather design insights.
3. Elaborate on creating mood and theme boards that reflect findings from fashion market research.
4. Extract key design inspirations from mood boards based on client preferences and current trends.
5. Construct garment designs by using selected design elements aligned with mood board concepts.
6. Describe the main types of design elements such as lines, colours, textures, and their use in fashion.
7. Describe past design collections and assess available raw materials, equipment, and skillsets within the organisation.
8. Describe various natural and synthetic fibres like cotton, silk, polyester, and nylon, and explain how their properties impact fabric use.
9. Elaborate on why compliance with dyeing and processing norms is critical for environmental and worker safety.
10. Describe the basic tools and step-by-step procedures used for taking accurate body measurements.
11. Illustrate the correct techniques for taking body measurements required for garment construction.
12. Describe the commonly followed national and international standard sizing systems for garments.
13. Explain how to drape fabric on a mannequin to develop basic garment pattern structures.
14. Prepare garment patterns using either draping techniques or direct body measurements.
15. Outline the correct method for laying garment patterns on fabric to optimise usage and ensure grain alignment.
16. Describe the entire process of cutting garments from fabric including positioning and precision steps.
17. Explain how to cut each garment component precisely to match the given patterns.
18. Construct full garments by assembling and stitching all cut components as per the design.
19. Elaborate on commonly used embroidery techniques that add decorative value to garments.
20. Highlight the different types of garments and identify key components such as collars, necklines, and sleeves.

UNIT 7.1: Design Research and Development Skills

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe how to plan market research using tools like fashion shows, forecast magazines, and market analysis.
2. Research fashion trends using forecast sources such as WGSN and catalogues.
3. Elaborate on the mood and theme boards based on market research findings.
4. Extract key design elements from mood boards according to client needs.
5. Construct garment designs using selected elements of design.
6. Describe different types of design elements used in fashion.
7. Describe previous designs and the available raw materials, machinery, equipment, and skill sets in the organisation.

7.1.1 Planning Tools for Market Research

Planning tools for market research are essential for systematically gathering and analysing information about target consumers, competitors, and industry trends. These tools include survey software, data analytics platforms, focus group guides, and competitive analysis frameworks. Utilising them effectively helps businesses make informed decisions about product development, pricing, and marketing strategies. Planning tools for market research for an assistantant designer in the apparel sector must be carried out through the following stages:

- **Survey software**

Survey software includes digital tools used to collect feedback from consumers about their preferences and needs. By implementing such tools, organisations can gain real-time, scalable insights into customer opinions and expectations. This helps shape products and services more effectively. However, neglecting survey software leads to a lack of consumer voice in product planning, resulting in offerings that may not align with customer needs. For example, in the apparel sector the survey software can be used to gather customer feedback on fabric preferences, colour trends, or seasonal styles before finalising a new collection.

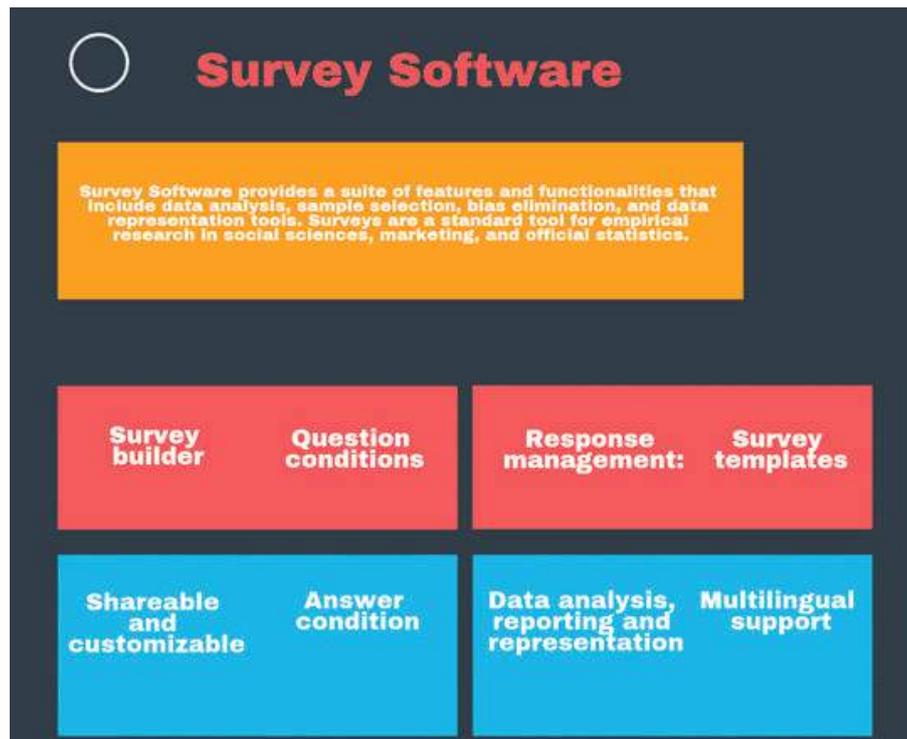


Fig. 7.1.1: Survey software usage stages

- **Data analytics platforms**

Data analytics platforms are used to analyse consumer trends, sales data, and market behaviour. These platforms enable data-driven decision-making and accurate forecasting, ensuring that business strategies align with current market realities. Ignoring these tools can cause companies to miss the key trends and create products that are poorly aligned with consumer demand. For example, in the apparel sector, an assistant designer can use data analytics to identify which designs or colour combinations sold best in previous seasons, helping to predict what will appeal to customers in upcoming collections.



Fig. 7.1.2: Data analytics platform capabilities

- **Focus group guides**

Focus group guides provide structured methods for conducting discussions with target users to gather in-depth qualitative feedback. This process helps reveal user expectations, emotional triggers, and preferences that numbers alone may not show. Without focus group insights,

organisations risk having an incomplete understanding of consumer motivations, which can weaken product relevance. For example, the assistant designer may use focus group discussions with target consumers to understand how people feel about comfort, fit, or fabric softness in a new clothing line.

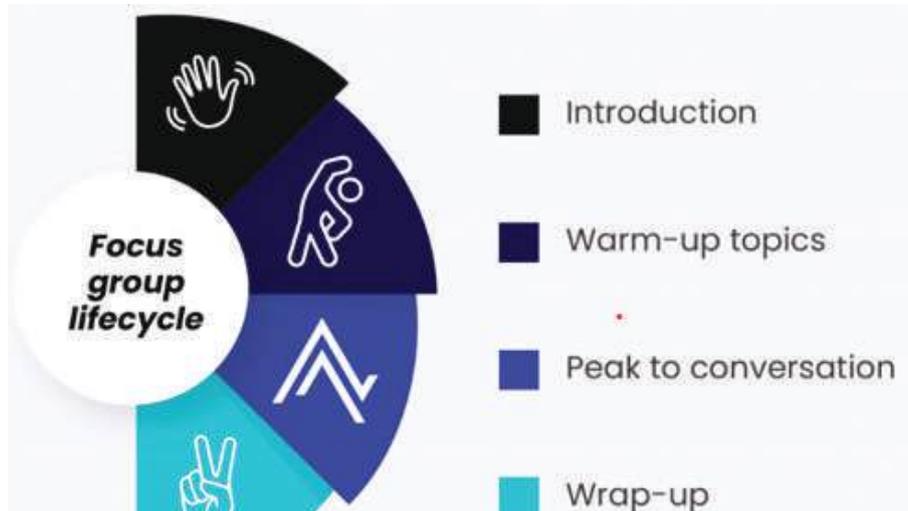


Fig. 7.1.3: Focus group functions

- **Competitive analysis frameworks**

Competitive analysis frameworks are tools designed to evaluate competitor products, pricing strategies, and market positioning. Their use allows businesses to benchmark their performance and identify market gaps or opportunities for innovation. Neglecting competitive analysis can result in outdated strategies and loss of market share to more proactive competitors. For example, the assistant designer can study competitors' collections to compare styles, pricing, and materials, helping to design products that are both trendy and competitively priced.

STRATEGIC GROUP ANALYSIS

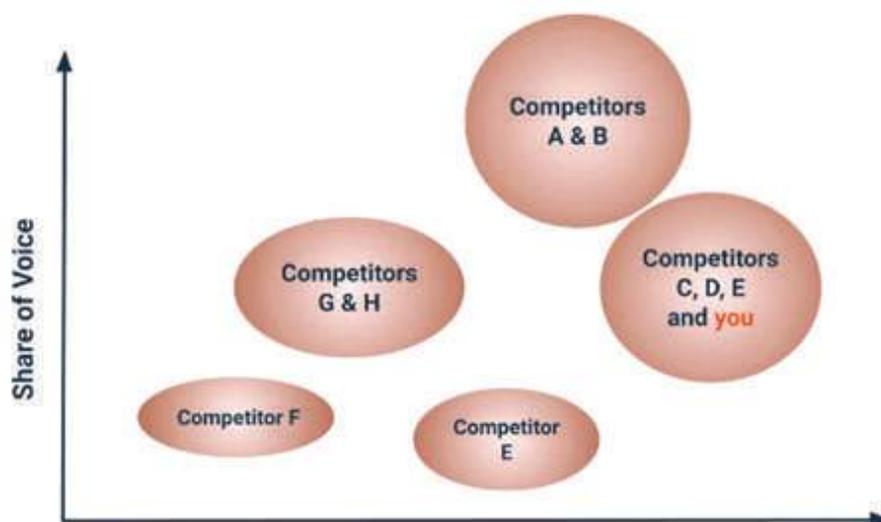


Fig. 7.1.4: Competitive and strategic analysis framework

7.1.2 Researching Trends and Forecast Sources

Researching trends and forecast sources is crucial for staying ahead in dynamic industries like apparel and home furnishings. This involves analysing reputable fashion forecasting agencies, trend reports, social media insights, and consumer behaviour data to identify emerging styles, colours, and materials. By understanding future directions, designers and businesses can develop relevant and desirable products.

Source/Tool	Explanation	Impact of Implementation	Impact of Neglect
Fashion Forecasting Agencies	Professional services that predict future styles, colours, and materials	Guides timely and trend-forward product development	Outdated designs and missed market opportunities
Trend Reports	Publications highlighting seasonal and annual style directions	Helps align design planning with upcoming market trends	Design misalignment with consumer expectations
Social Media Insights	Monitoring platforms like Instagram, Pinterest, and TikTok for real-time trends	Reflects what consumers are currently engaging with	Misses viral and fast-changing trend shifts
Consumer Behaviour Data	Analysing shopping patterns, feedback, and preferences from target audiences	Supports creation of desirable and relevant products	Poor product-market fit and low sales performance

Table 7.1.1: Researching trends and forecast sources

7.1.3 Developing Mood and Theme Boards

Developing mood and theme boards is a creative and collaborative process used to visually articulate the aesthetic direction for a design collection or product line. These boards typically incorporate images, textures, colour palettes, and descriptive words that capture the overarching feeling, inspiration, and key elements of the proposed designs. They serve as a vital reference point, ensuring consistency and guiding the design team's creative decisions.

Collaborative Process	Description and Importance	Image
Mood Board	A mood board is a visual tool that combines images, textures, colours, and text to convey the emotional tone of a design. It helps the team align creatively and inspires a unified aesthetic direction.	

Collaborative Process	Description and Importance	Image
Theme Board	A theme board presents structured inspiration through patterns, motifs, cultural elements, and seasonal cues. It is essential for maintaining concept consistency and guiding all design choices.	

Table 7.1.2: Collaborative visual planning tools

7.1.4 Extracting Elements from Mood Boards

Extracting elements from mood boards involves carefully identifying and isolating the key visual and conceptual components that will directly influence the design process. This includes pinpointing specific colours, textures, patterns, silhouettes, and stylistic cues that resonate with the overall theme. This analytical step transforms abstract inspiration into concrete design directives, guiding the creation of cohesive products.

Element	Description and Importance	Stage of Extraction	Images
Colours	Identifying key colours helps set the visual tone and ensures colour consistency across the collection, aligning with seasonal or brand palettes.	Initial Review of Mood Board	
Textures	Highlighting specific textures (e.g., rough, smooth, layered) adds tactile depth to the design and supports the desired mood or feel of the product.	Mid-Analysis of Visual Elements	
Patterns	Choosing recurring patterns provides design continuity and reflects cultural, seasonal, or conceptual influences.	Visual Mapping Stage	

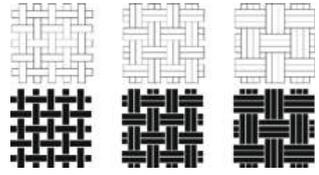
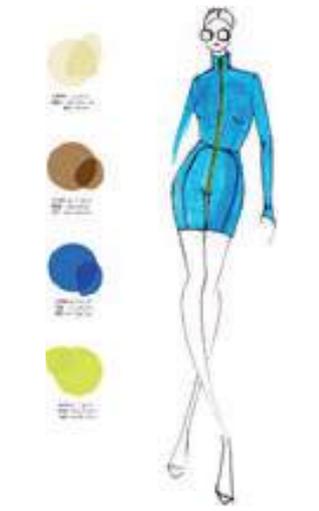
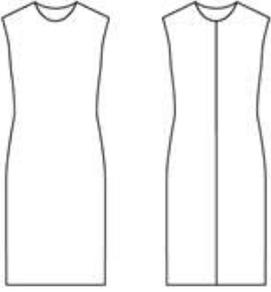
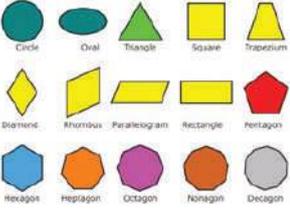
Element	Description and Importance	Stage of Extraction	Images
Silhouettes	Extracting garment shapes or silhouettes guides the form and structure of the designs, helping maintain visual harmony.	Final Form Selection	
Stylistic Cues	Recognising details like trims, finishes, and motifs helps define the product's identity and strengthens brand coherence.	Design Detailing Stage	
Concrete Design Directives	These are clear takeaways from the mood board that convert abstract inspiration into actionable design elements for production.	Post-Analysis and Concept Locking	
Cohesive Product Creation	Using extracted elements ensures the final products align with the theme, improving marketability and brand alignment across the collection.	Pre-Design Execution	

Table 7.1.3: Extracting elements from mood boards

7.1.5 Constructing Designs Using Design Elements

Constructing designs using design elements involves strategically combining fundamental components like line, shape, colour, texture, and pattern to create a cohesive and aesthetically pleasing product. This process requires an understanding of design principles such as balance, proportion, emphasis, and rhythm to achieve the desired visual impact and functionality. Each element is deliberately chosen and placed to contribute to the overall harmony and purpose of the design.

Design Element	Description and Importance	Design Purpose in Industry	Images
Line	Lines create direction, movement, and outlines. They influence the silhouette and define structure in garments and furnishings.	Adds structure and flow to apparel and furnishings	
Shape	Shapes define the external form and help in visual categorisation of products.	Builds recognisable and functional product forms	
Colour	Colour sets mood, represents seasons, and appeals emotionally to consumers.	Communicates themes and attracts target markets	
Texture	Texture affects the tactile feel and visual richness of a product.	Enhances sensory experience in garments and interiors	
Pattern	Patterns add repetition, interest, and brand recognition.	Creates aesthetic appeal and uniqueness	

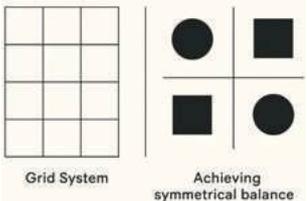
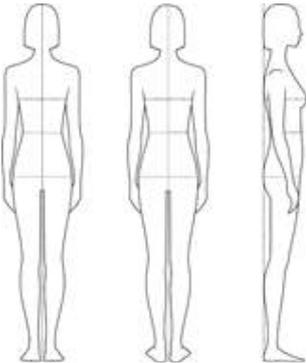
Design Element	Description and Importance	Design Purpose in Industry	Images
Balance	Visual balance ensures harmony among design components—symmetrical or asymmetrical.	Maintains pleasing proportions in products	 <p>Grid System</p> <p>Achieving symmetrical balance</p>
Proportion	Proportion involves size relationships between elements, important for fit and style.	Ensures wearability and comfort in apparel	
Emphasis	Emphasis directs attention to focal points in design, like a motif or trim.	Highlights signature features and brand identity	
Rhythm	Rhythm creates movement through repetition of elements like lines or colours.	Keeps viewer's interest and supports cohesive design flow	<p>Rhythm- Radiation Lines flow out from a single point.</p>  <p>Linear rhythm</p>

Table 7.1.4: Constructing designs using design elements

7.1.6 Identifying Types of Design Elements

Identifying types of design elements involves recognising the fundamental building blocks that constitute any visual composition. These typically include line (straight, curved, jagged), shape (geometric, organic), colour (hue, saturation, value), texture (smooth, rough, soft), and pattern (repeating motifs). A clear understanding of these elements is crucial for designers to effectively communicate their vision and construct compelling products.

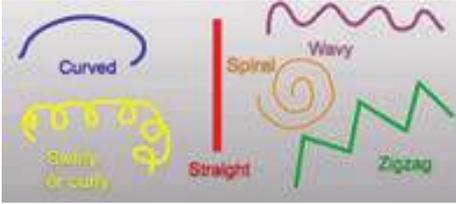
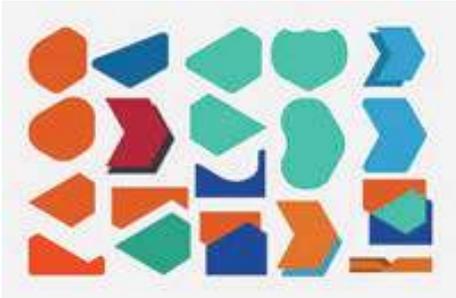
Design Element	How to Identify	Images
Line (straight, curved, jagged)	Observe seam lines, garment outlines, or stitching patterns. Straight lines give structure, curves add softness, and jagged lines create bold impact.	
Shape (geometric, organic)	Look at the silhouette of the product. Geometric shapes are angular or symmetrical (like squares or rectangles), while organic shapes are more flowing or asymmetrical.	
Colour (hue, saturation, value)	Identify the dominant hue (e.g., red, blue), intensity (bright or dull), and lightness/darkness of the colours used in fabrics or prints.	
Texture (smooth, rough, soft)	Feel or visually examine the fabric surface. Smooth textures appear sleek, rough ones add depth, and soft ones suggest comfort.	
Pattern (repeating motifs)	Look for repeated visual elements like florals, stripes, or checks. Patterns can be bold, subtle, symmetrical, or random, often printed or woven.	

Table 7.1.5: Identifying types of design elements

7.1.7 Describing Previous Designs and Resources

Describing previous designs and resources involves a comprehensive review and articulation of past creative works and the materials or inspirations used. This process helps in identifying successful elements, understanding design evolution, and leveraging existing assets for new projects. By effectively documenting and analysing prior work, designers can build upon their experiences and streamline future creative processes.

Design Resource Type	Description and Use	Images
Mood Boards	Visual boards with images, colours, and textures that convey the overall design theme.	
Theme Boards	Boards focused on a particular trend, story, or seasonal direction for a collection.	
Colour Forecasts	Predicted colour trends for upcoming seasons, used to guide fabric and design choices.	
Fabric Swatches	Small fabric samples that help assess texture, colour, and suitability for products.	

Design Resource Type	Description and Use	Images
Trim Cards	Collections of sample accessories like buttons, zippers, and laces for selection.	

Table 7.1.6: Types of design resources

UNIT 7.2: Fabric, Fibres, and Swatch Management

Unit Objectives

By the end of this unit, the participants will be able to:

1. Describe the types of natural and synthetic fibres like cotton, silk, polyester, and nylon, and how their properties affect fabric behaviour.
2. Elaborate on the importance of dye and process compliance in reducing environmental harm and protecting worker health.

7.2.1 Describing Fibres and Textile Processes

Describing fibers and textile processes involves detailing the characteristics of various natural and synthetic fibers, such as cotton, silk, polyester, and nylon, and explaining how their properties influence fabric behaviour.

Aspect	Description	Images	Textile process
Cotton	Natural fibre; soft, breathable, and absorbent.		Grown as a crop, harvested, ginned to remove seeds, spun into yarn, then woven or knitted into fabrics.
Silk	Natural fibre; smooth, shiny, and luxurious with good drape.		Produced by silkworms, the filament is reeled from cocoons, then woven into fine fabrics.
Wool	Natural fibre; warm, elastic, and moisture-wicking.		Sheared from sheep, cleaned (scoured), carded, spun into yarn, and often woven or knitted.

Aspect	Description	Images	Textile process
Polyester	Synthetic fibre; strong, wrinkle-resistant, and quick-drying.		Made from petrochemicals, melted and extruded through spinnerets into fibres, then spun into yarn.
Nylon	Synthetic fibre; durable, elastic, and resistant to abrasion and moisture.		Chemically synthesised, melted and extruded into long filaments, then textured and woven.
Rayon	Semi-synthetic fibre; soft, breathable, and drapes like natural fibres.		Regenerated from cellulose (wood pulp), dissolved, spun into fibres, then woven or knitted.

Table 7.2.1: common types of fibres

Applying fabric behaviour also includes outlining the methods used to transform these fibers into textiles, encompassing spinning, weaving, knitting, and various finishing treatments.

	PRE-TREATMENT	COLOURATION	WASH/DRY & FUNCTIONAL FINISHING
Description	Pretreatment's main purpose is to clean the fibre/fabric and make the dyeing or finishing step more efficient. It's often followed by a dry heat stentering process to induce stability into fabrics.	Colouration is the application of dyestuff on textile materials such as fibres, yarns or fabrics with the goal of achieving colour with desired colour fastness.	Post wash/drying is required to fix chemicals to the fabric. Functional finishes are applied to a textile to give it a specific desirable quality or functionality. Additional heat setting is applied as required.
Processes & Functions examples	<p>Functions: (De)sizing, Scouring, Bleaching, Neutralisation, Mercerising, Optical Brightening, Biopolishing</p> <p>Dominating machines: padder or heated chemical bath (e.g. pad-steam, pad-roll, J-box, Jigger)</p>	<p>Functions: Dyeing & Printing</p> <p>Dominating machines chemical bath (e.g. jigger & jetter)</p> <p><i>Different dye types are used for different fibres</i></p>	<p>Functions: fixing chemistry, DW(O)R, Flame Retardancy, Stain resistance, Easy Care, Softening, Antistatic, Antimicrobial, Biopolishing, Improved handle</p> <p>Dominating machines: padder or heated chemical bath (e.g. pad-steam, pad-roll, J-box, Jigger)</p>

Fig. 7.2.1: Fibre and textile process

This knowledge is crucial for selecting appropriate materials for specific product applications and understanding fabric performance

Aspect	Description	Aspect
Understanding Fabric and Product Manufacturing	Learning the complete process from raw material to finished product, including weaving, knitting, dyeing, printing, garment construction, and quality control for better planning and quality assurance.	Understanding Fabric and Product Manufacturing
Managing Fabric and Trim Swatches	Organising, labelling, and storing fabric and trim samples for easy access and consistency in design and production workflows.	Managing Fabric and Trim Swatches
Identifying Fabric and Trim Swatches	Recognising fabric types, compositions, colours, weaves, and finishes to ensure accuracy in sourcing and uniformity in product development.	Identifying Fabric and Trim Swatches

7.2.2 Following Dye and Process Compliance

Following dye and process compliance involves adhering to all relevant environmental, health, and safety regulations pertaining to dyeing and finishing processes in textile manufacturing. This includes managing wastewater, controlling chemical usage, and ensuring proper ventilation to minimise ecological impact and safeguard worker health.

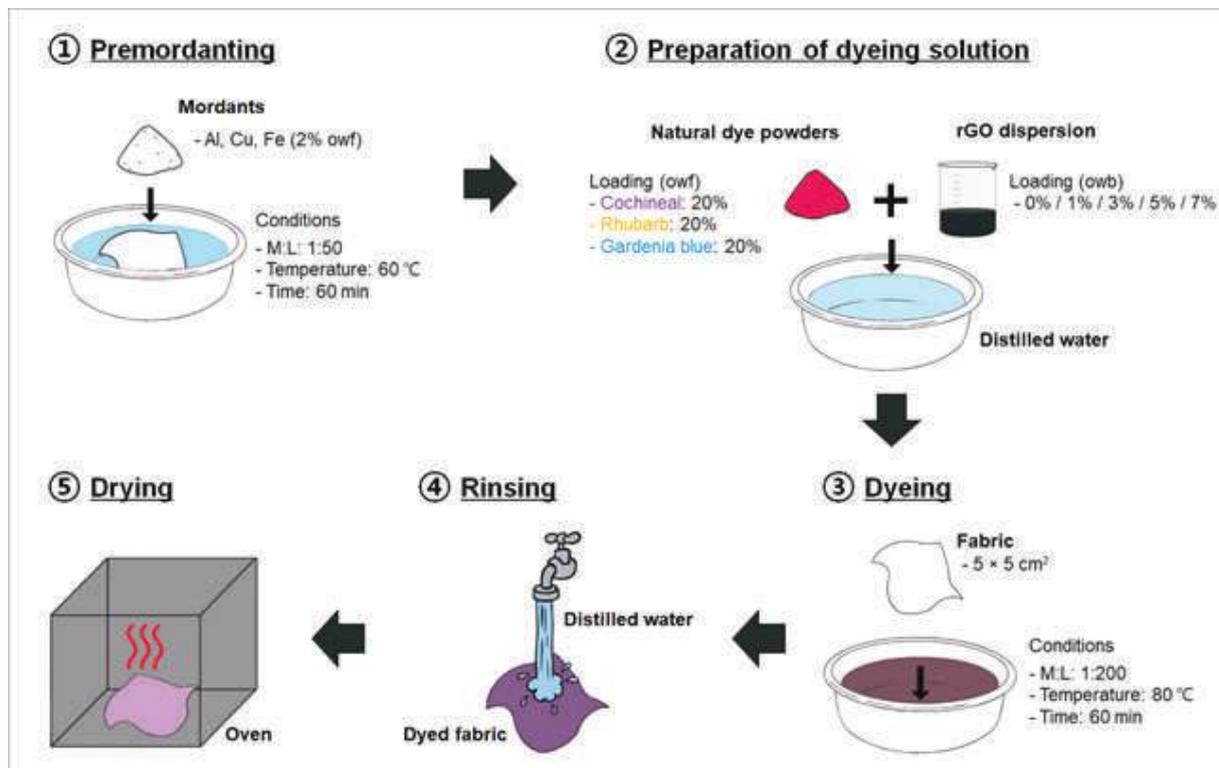


Fig. 7.2.2: Dyeing process

Strict adherence to these standards is essential for sustainable production and avoiding legal penalties.

Aspect	Description
Managing Wastewater	Involves treating and disposing of dyeing and processing water responsibly to reduce environmental pollution and meet legal and sustainability standards.
Controlling Chemical Usage	Ensures only approved and safe chemicals are used in proper quantities to reduce harm to workers, consumers, and the ecosystem.
Ensuring Proper Ventilation	Maintains good air circulation in dyeing and processing areas to protect worker health from harmful fumes and heat.

Table 7.2.2: Dye and process compliance practices

UNIT 7.3: Measurement, Draping, and Construction Techniques

Unit Objectives

By the end of this unit, the participants will be able to:

1. Elaborate on the use of measurement tools and procedures to ensure accuracy in garment fitting and construction.
2. Describe how to illustrate body measurement techniques accurately for different garment types.
3. Explain how to identify and compare national and international sizing systems used in the fashion industry.
4. Discuss the method of draping a mannequin to create basic garment patterns.
5. Highlight the process of developing patterns through draping methods and its role in custom garment design.
6. Outline the steps involved in pattern laying and fabric cutting to reduce fabric wastage and maintain garment shape.

7.3.1 Understanding Measurement Tools and Procedures

Understanding measurement tools and procedures is foundational in garment and pattern making to ensure accuracy and consistency. This involves familiarity with various instruments like tape measures, rulers, and curves, as well as the correct techniques for their application in taking body measurements or drafting patterns. Precise measurement is critical for achieving correct fit and proportions in the final product.

Measuring Tools	Measuring Process	Images
Tape Measure	Used to take flexible body or fabric measurements (e.g., bust, waist, and inseam). It can wrap around curved areas.	
Ruler	Used for straight-line measurements and marking hemlines or pattern edges. Typically rigid and precise for flat surfaces.	
French Curve / Patter Curve	Used to measure and draw smooth curves in armholes, necklines, and hips on patterns. Helps in shaping and contouring.	

Table 7.3.1: Measuring tools and their applications

7.3.2 Illustrating Body Measurement Techniques Accurately

Illustrating body measurement techniques accurately involves demonstrating the precise points and methods for taking various measurements on the human body, such as bust, waist, hips, and inseam. This visual and procedural clarity ensures consistency across different fitters and results in accurate data for pattern drafting and garment sizing.

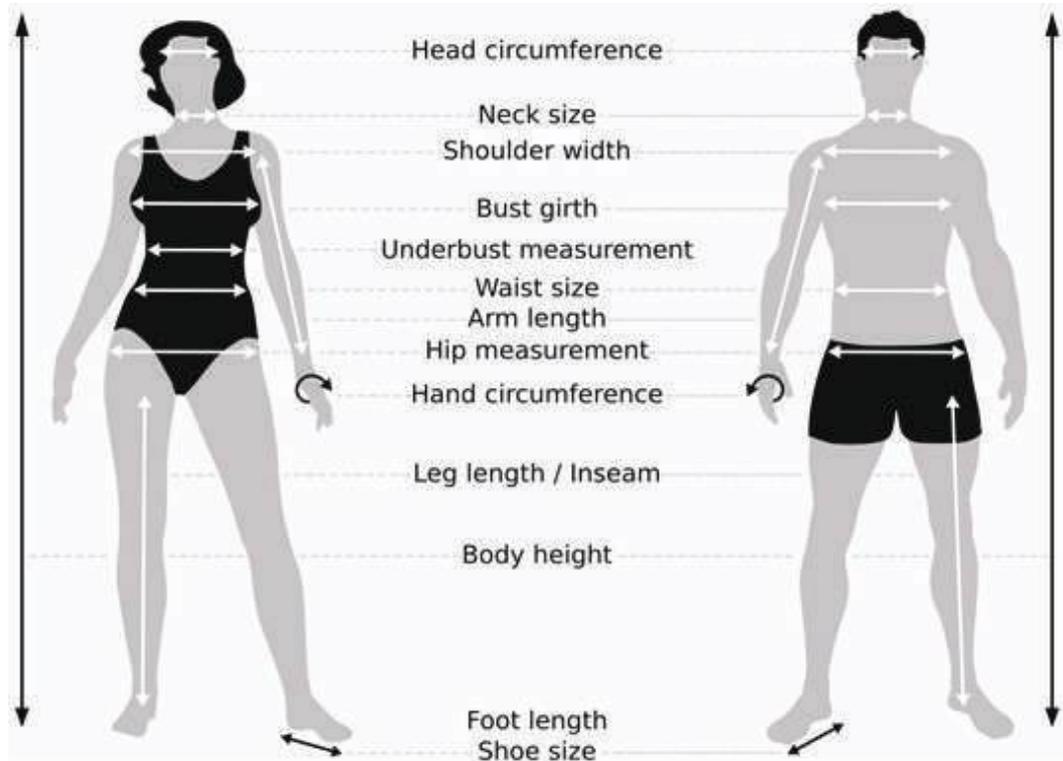


Fig. 7.3.1: Body measurement

Proper illustration is crucial for achieving well-fitting apparel.

Body Area	Measurement Technique
Bust	Measure around the fullest part of the bust with the tape parallel to the floor.
Waist	Measure around the natural waistline, usually the narrowest part of the torso.
Hips	Measure around the fullest part of the hips, typically 7–9 inches below the waist.
Inseam	Measure from the crotch seam to the bottom of the ankle while standing straight.

Table 7.3.2: Body measurement techniques

7.3.3 Identifying National and International Sizes

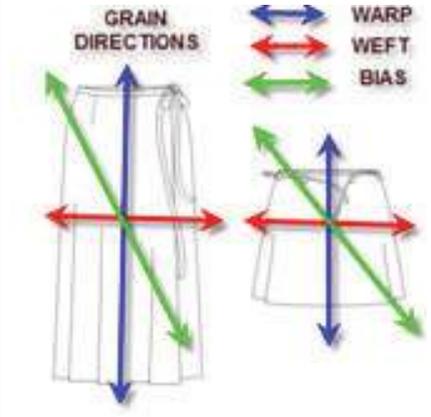
Identifying national and international sizes involves understanding the diverse sizing conventions and standards used across different countries and regions for apparel and home furnishings. This knowledge is crucial for product development, ensuring garments and items are appropriately sized for target markets globally. It requires familiarity with conversion charts and regional fit preferences to avoid sizing discrepancies.

Category	National Sizes	International Sizes
Apparel	India (S, M, L, XL), numeric sizes (32, 34, 36, etc.)	US (2, 4, 6...), UK (8, 10, 12...), EU (34, 36, 38...), Asia (M, L, XL)
Home Furnishings	India (Single, Double, Queen, King bedsheet/towel sizes)	US (Twin, Full, Queen, King), EU (90×200, 160×200 cm, etc.)
Made-Offs	Customised sizing based on domestic production templates	Adapted to buyer country specs: ISO, ASTM, or private standards

Table 7.3.3: Size standards across product categories

7.3.4 Draping Mannequin for Pattern Making

Draping a mannequin for pattern making involves manipulating fabric directly on a three-dimensional form to create a garment's pattern. This hands-on method allows designers to visualise the drape, fit, and flow of a design more intuitively than flat pattern drafting. It's a highly creative process that helps in understanding fabric behaviour and developing unique silhouettes.

Stage	Description	Images
Preparing the mannequin	Begin by covering the mannequin with a fitted cover and marking key reference lines such as the bust, waist, hip, shoulder, and centre front to guide accurate fabric placement.	
Selecting fabric	Choose a suitable muslin or draping fabric that closely mimics the weight and fall of the intended garment material, ensuring realistic results.	
Grainline alignment	Carefully align the fabric's grainline with the vertical and horizontal guides on the mannequin to ensure the draped garment will maintain proper shape and structure.	

Stage	Description	Images
Pinning the fabric	Start draping by pinning the fabric to one side of the mannequin, shaping it around contours like the bust and waist while smoothing out folds and wrinkles.	 A close-up photograph showing a person's hands pinning a piece of light-colored fabric to a black mannequin. The fabric is being shaped around the bust and waist area.
Marking design lines	Use a fabric marker or chalk to sketch important style and construction lines such as necklines, darts, armholes, and seams directly onto the fabric.	 A photograph of a tan-colored dressmaker's mannequin. Black lines are drawn on the fabric to indicate design and construction lines, including the neckline, bust, waist, and armholes.
Repeating on the other side	Mirror the draped structure and markings on the opposite side to ensure symmetry and balance in the overall pattern.	 A photograph of a tan-colored dressmaker's mannequin, similar to the previous one. It shows the mirrored design lines on the opposite side of the body to ensure symmetry.
Trimming and finalising	Trim away any excess fabric and refine the shape by adjusting pin placements and smoothing curves to finalise the drape.	 A photograph of a fashion display featuring several mannequins. One is wearing a white dress, another a black dress, and another a yellow dress. They are arranged on white pedestals in a well-lit room.

Table 7.3.4: Stages of draping the mannequin

7.3.5 Developing Patterns by Draping Methods

Developing patterns by draping methods involves shaping and pinning fabric onto a dress form to achieve the desired garment silhouette and fit. Once the fabric is draped and marked, it is then removed from the form and flattened to create a two-dimensional paper pattern. This technique is particularly effective for designing complex or fluid garment styles, providing an immediate visual understanding of the design's three-dimensional qualities.

Draping Method	Pattern Building Technique	Images
Basic Bodice Draping	Drape muslin on torso; mark bust, waist, darts, and seams for bodice block.	
Skirt Draping	Wrap fabric from waist down; shape darts and seams, then mark hemline.	
Sleeve Draping	Drape over armhole; shape cap and sleeve length, mark centre and seam lines.	
Cowl Draping	Let fabric fall loosely; define folds naturally, then mark neckline and sides.	

Draping Method	Pattern Building Technique	Images
Princess Line Draping	Drape over bust and waist curves; create continuous shaping seam lines.	
Yoke Draping	Drape and mark yoke area first; add lower sections by matching seam lines.	
Bias Draping	Use fabric cut on bias; drape for natural fall and mark flowing lines.	
Asymmetrical Draping	Drape unevenly across mannequin; mark irregular lines and shapes accurately.	

Table 7.3.5: Different types of drapes patterns

7.3.6 Pattern Laying and Fabric Cutting

Properly laying out patterns on fabric is a critical initial step in garment production, ensuring efficient material usage and accurate garment construction. It involves carefully positioning pattern pieces according to grainlines and fabric characteristics to minimise waste and achieve the desired drape. The garment cutting process then meticulously transforms these laid-out fabrics into precise components for assembly. Pattern laying and fabric cutting has the following stages:

- **Laying Patterns Correctly on Fabric**

Laying patterns correctly on fabric is a critical step in garment production that directly impacts material usage and cutting accuracy. This involves carefully positioning pattern pieces according to the fabric grainline, nap direction, and design requirements to minimise waste and ensure consistent garment fit. Strategic pattern layout is essential for cost efficiency and quality control in the cutting process.

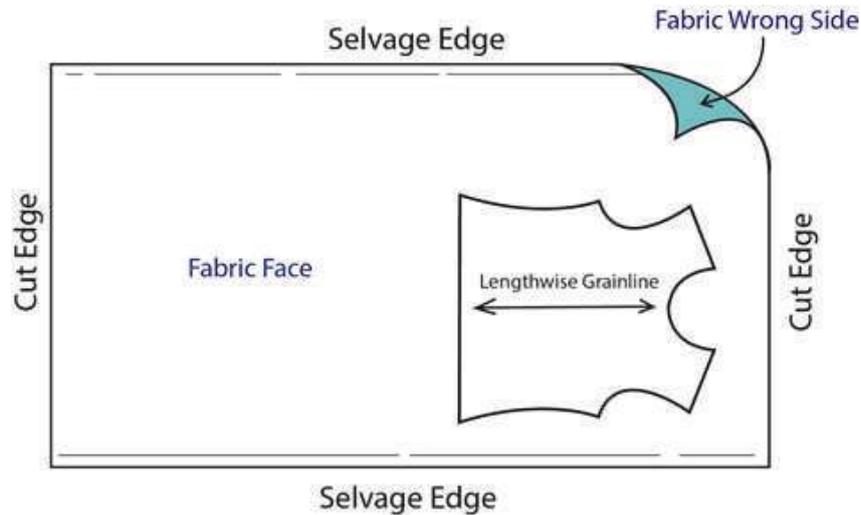


Fig. 7.3.2: Layering pattern correctly on fabrics

Layering patterns correctly on fabric has the following sub-stages:

- **Pattern Making:**

This initial stage involves creating the precise templates for each garment component. These patterns dictate the exact shape and size of every piece that will be cut from the fabric.



Fig. 7.3.3: Pattern making on fabric

- **Receiving Cutting Requirements:**

Here, the cutting department receives detailed specifications for the order, including garment styles, sizes, quantities, and fabric types. This information is crucial for planning the cutting process efficiently. The cutting requirements are seen through a garment specification sheet:

- **Fabric Spreading/Layering:**

Multiple layers of fabric are neatly and evenly laid out on a long table, creating a "ply" of fabric ready for cutting. The number of layers depends on the order quantity and fabric thickness.



Fig. 7.3.7: Fabric layering

- **Marker Making:**

A marker is a precisely arranged layout of all the pattern pieces on a single layer of fabric, designed to minimise waste and maximise efficiency. This can be done manually or using specialised computer-aided design (CAD) software.

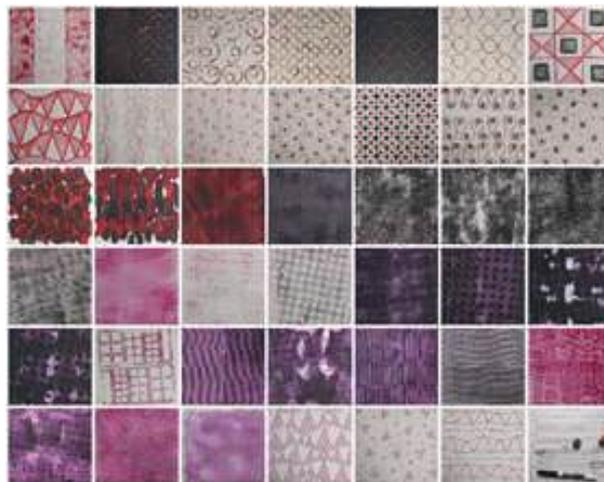


Fig. 7.3.8: Fabric marking

- **Cutting:**

Using the marker as a guide, the laid-out fabric plies are precisely cut into individual garment components. This is often done with automated cutting machines, but can also involve manual cutting for smaller runs or intricate designs.



Fig. 7.3.9: Fabric cutting

- **Numbering:**

After cutting, each individual garment component is assigned a unique number to ensure that all pieces belonging to a single garment stay together throughout the subsequent production stages. This prevents mix-ups and maintains consistency.



Fig. 7.3.10: Fabric numbering

- **Sorting:**

Cut pieces are organised by style, size, and shade to prepare them for the next stage of assembly. This systematic arrangement facilitates smooth workflow and prevents errors in the stitching department.



Fig. 7.3.11: Fabric sorting

- **Bundling:**

Finally, the sorted and numbered garment components are grouped together into bundles for easy handling and transport to the sewing lines. Each bundle contains all the necessary pieces for a specific number of garments.



Fig. 7.3.12: Fabric bundling

- **Describing the Garment Cutting Process**

Describing the garment cutting process involves outlining the sequential steps involved in transforming patterned fabric into individual garment components. This typically includes spreading multiple layers of fabric, accurately placing and securing patterns, and then precisely cutting through the layers using specialised machinery like straight knives, band knives, or automated cutters. This stage is crucial for ensuring uniform sizing and efficient assembly of garments.

Component	Description	Images
Garment Types	Includes dresses, shirts, trousers, outerwear—each with distinct design and construction features.	
Garment Parts	Key elements like collars, sleeves, cuffs, pockets, plackets, and zippers crucial for structure and style.	
Pattern-Based Cutting	Cutting fabric pieces accurately using developed patterns ensures shape, size, and fit consistency.	

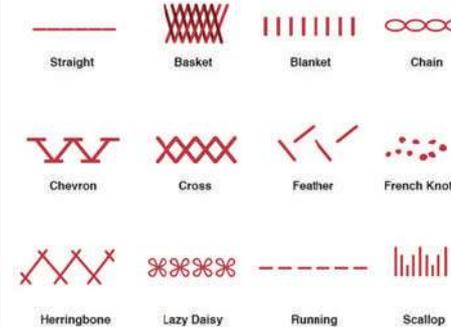
Component	Description	Images
<p>Fabric Cutting Accuracy</p>	<p>Meticulous cutting minimises waste and supports high-quality garment assembly.</p>	
<p>Seaming and Stitching Techniques</p>	<p>Employing various sewing methods based on garment type and material, ensuring durability and aesthetic appeal.</p>	
<p>Embroidery Techniques</p>	<p>Using hand or machine stitching to add decorative elements, varying from fine detail to large-scale production.</p>	
<p>Design-Based Embellishments</p>	<p>Choosing embroidery styles based on fabric type, design intent, and production volume.</p>	
<p>Garment Assembly</p>	<p>Joining fabric pieces using stitching, attaching functional parts (pockets, buttons), and following stepwise processes.</p>	

Table 7.3.6: Garment construction process overview

Summary

- Market research helps understand trends using tools like fashion shows, magazines, and WGSN.
- Studying forecast sources helps identify current fashion trends and consumer preferences.
- Mood and theme boards help turn market insights into creative design ideas.
- Design elements should be selected from mood boards based on client requirements.
- Garment designs must be developed using appropriate and relevant design elements.
- Designers must know common design elements and assess previous collections and resources.
- Understanding fibre types and textile processes is essential for fabric planning.
- Fabric and product manufacturing steps must be clearly understood for quality output.
- Fabric, trim, and accessory swatches must be collected and organised for reference.
- Compliance with dyes, fabrics, and garment construction rules is necessary for safety and quality.
- Accurate body measurements and correct size standards ensure proper garment fit.
- Garments must be cut, stitched, and embroidered using proper construction techniques and parts.

Exercise

Multiple-choice Question:

1. Which tool is commonly used for forecasting fashion trends?
 - a. Sewing machine
 - b. WGSN
 - c. Tailoring tape
 - d. Fabric scissors
2. What is the main use of a mood board in fashion design?
 - a. Measuring body sizes
 - b. Cutting garment components
 - c. Presenting design ideas visually
 - d. Storing fabrics
3. What is the purpose of taking accurate body measurements?
 - a. To identify garment colours
 - b. To fit garments correctly
 - c. To create mood boards
 - d. To select design elements
4. Which of the following is a component of a garment?
 - a. Cotton plant
 - b. Sleeves
 - c. Dye vat
 - d. Forecast magazine
5. What does compliance in garment production ensure?
 - a. Faster production
 - b. Trendy designs
 - c. Legal and safety standards
 - d. Cheaper raw materials

Descriptive Questions:

1. Describe how market research is conducted using trend sources.
2. Explain how mood boards support fashion designing.
3. List the steps in textile manufacturing.
4. Describe the proper way to cut garment fabric.
5. Explain how to use size standards in garment making.



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8. Employability Skills



DGT/VSQ/N0102

Employability Skills is available at the following location



<https://www.skillindiadigital.gov.in/content/list>

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9. Annexure



Module No.	Unit No.	Topic Name	Page No	Link for QR Code (s)	QR code (s)
Module 1: Introduction and Orientation to Assistant Designer-Fashion, Home and Made-Ups (Bridge Module)	Unit 1.1: Assistant Designer-Apparel, Made ups and Home Furnishings Duties	1.1.1 Apparel Production Process and Role	14	https://youtu.be/ddisteV3tOo?si=uFDW4QKnI-toOKnY	 Textile Sector in India Bangladesh Crisis: An opportunity for India
		1.1.2 Assistant Designer Responsibilities in Apparel	14	https://youtu.be/825tSjp-5ZA?si=7oDWBB-ZkhEZIDiu	 Fashion Designer Job Description Fashion Designer Roles and Responsibilities
Module 2: Develop Proto and Fit Samples (AMH/N1211)	Unit 2.1: Sample Development and Production Process	2.1.1 Steps for Developing Fit Samples	37	https://youtu.be/6fUbDZvWn-Nc?si=alDmzjiPdKagzEGW	 APPAREL TECHNICAL DESIGN PROCESS
	Unit 2.2 Techpack, Costing, and Pattern Making	2.2.2 Proto Sample Creation Using Techpack	37	https://youtu.be/zQSRr8m-dg1k?si=MBIJ8Y2gDH-3QCvJ	 GARMENT SAMPLING PROCESS - DENIM HUT.

Module No.	Unit No.	Topic Name	Page No	Link for QR Code (s)	QR code (s)
Module 3: Evaluate the proto sample developed related to specific product class (AMH/ N1222)	Unit 3.1: Design and Sample Review Process	3.1.1 Design Process Planning and Development	54	https://youtu.be/iAcFBdz2Cpg?si=j-nTJmUCVxUUSmqg	 fashion design process how fashion designers work
		4.1.3 Correct Personal Protective Equipment Use	100	https://youtu.be/-2FxBRTD6vCM-?si=P8vNp0eKcLeo_Jft	 Electrical Safety Equipment in Hindi
Module 4: Maintain health, safety and security in the designing department with Gender and PwD Sensitization (AMH/ N1223)	Unit 4.1: Workplace Health and Safety Measures	4.1.4 Basic First Aid Situations Preparation	100	https://youtu.be/-hizBdM1Ob68-?si=7DchgX-9abjk0lrs	 Learn How To Do CPR
		4.1.6 Fire Hazards and Safety	100	https://youtu.be/-uDeD7ePr9U-?si=GVd2wLBKzfbY3mEP	 Flash Fire Flash Fire Hazards
	Unit 4.2: Emergency and Environmental Response	4.2.1 Mock-Drill and Evacuation Procedures	100	https://youtu.be/-VyiZcZhLEJ0-?si=Pq1djFEAFiyk_Y55	 How to conduct Mock Drill at work site

Module No.	Unit No.	Topic Name	Page No	Link for QR Code (s)	QR code (s)
		4.2.3 Operation of Effluent Treatment Plants	100	https://youtu.be/-JoD2ImG31q8-?si=EflgEKZM-SYjsJlC	 effluent treatment plant
Module 5: Select fabrics, trims and accessories as per specific product category (AMH/N2001)	Unit 5.1: Fabric and Accessories Selection	5.1.2 Fabric and Accessories Selection by Product	124	https://youtu.be/-OHmjUCOQXUQ-?si=ZPOHkas07D506Yvw	 Trims And Accessories? Different Types Of Trimmings And Accessories Used In Apparel Industry
Module 6: Abide by industry, regulatory, and organisational mandates, while integrating environmentally friendly practices (AMH/N0311)	Unit 6.1: Ethics and Workplace Responsibilities	6.1.1 Ethical Approach and Governance Importance	146	https://youtu.be/-ltW7KVYJ1go-?si=wzE1VK2cFgALdNY_	 Business Ethics, Nature of Business ethics
	Unit 6.2: Professional Conduct and Discipline	6.2.1 Importance of Punctuality and Attendance	146	https://youtu.be/-Pm8lzkVwOU4-?si=YSPOvKZZIYnJXF28	 Punctuality - A Winner's Habit
Module 7: Plan and prepare design collections of garments for a season (AMH/N1210)	Unit 7.1: Design Research and Development Skills	7.1.3 Developing Mood and Theme Boards	178	https://youtu.be/-87MvvCHkYdA-?si=UUPrsvSjXq3cjIT_	 INSPIRATION BOARD MOOD BOARD





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