UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

1-Year M.Sc. Fabric & Apparel Science

Research Track

Department of Home Science

University of Delhi

Course Credit Structure- NEP

2025

The Department of Home Science offers a 1-year master's programme in Fabric & Apparel Science. The programme equips the students with an understanding of design and technology in Fabric and Apparel along with an appreciation of our rich textile culture. The programme strives to build a cadre of professionals in the area of Fabric and Apparel Science. The courses are pitched at providing a strong theoretical base along with skill enhancement through hands-on training. The course aims to provide knowledge of the latest technological advances in textile and apparel sector as well as sensitize students towards the rich textile heritage, crafts and community. The curriculum provides experiential training to students for professional and career readiness with the right skill set needed in a competitive market scenario.

Programme Specific Objectives:

- To equip students with in-depth theoretical knowledge and analytical skills necessary to excel in the fields of fibre science, textile chemistry, apparel technology, sustainability, and fashion systems.
- To develop students' ability to conduct independent and collaborative research, address industry-related challenges, and contribute new knowledge to textile science and apparel technology.
- To encourage learners to integrate sustainable, ethical, and environmentally conscious approaches across textile production, fashion processes, and consumer practices.
- To cultivate respect for traditional textiles, craftsmanship, and cultural heritage, while equipping students with the skills for documentation, preservation, and conservation.
- To prepare graduates for leadership roles in academia, research organizations, textile and apparel industries, quality testing labs, conservation units, and entrepreneurial ventures.
- To enable students to engage with contemporary industrial practices, technological advancements, and global trends through internships, collaborations, and hands-on training.
- To encourage students to apply their expertise in ways that support the textile sector's growth, promote innovation, empower communities, and strengthen India's position in the global textile and fashion domain.

Programme Specific Outcomes:

The post graduate program in the Department of Fabric and Apparel Science, strives to educate and train students to enable them to:

- Demonstrate awareness of contemporary trends, technological innovations, and emerging developments in textiles and apparel, and apply this understanding to research and professional practice.
- Critically analyse and implement sustainable processes and practices across the textile and fashion value chain, promoting environmental responsibility and ethical decision-making.
- Preserve and conserve traditional and heritage textiles, using scientific methods and culturally informed approaches, blending traditional craftsmanship and modern innovation
- Develop a comprehensive understanding of the fundamentals of design concepts and an ability to think critically and creatively

- Understand the fashion industry ecosystem, including design thinking, product development, branding, and retail operations.
- Apply creative, managerial, and technical competencies to pursue diverse careers in academia, industry, research, and entrepreneurship within the textile, fashion, and allied sectors.
- Engage in research, innovation, and development activities that contribute to national growth, industry advancement, and societal well-being.

1 Yr- M.Sc. Fabric and Apparel Science

RESEARCH ONLY

Course Credit Scheme

Program Structure 3: M.Sc. Only Research

Semester	Core Courses		Elective Courses		Research Methodology		Research/Project		Total Credits
	No. of Courses	Total Credits	No. of Courses	Total Credits	No. of Courses	Total Credits	No. of Courses	Total Credits	
I	1	4	1	4	2	4	1	10	22
II	-	-	1	4	1	2	1	16	22
Total Credits for the Course	4		8		6		26		44

List of PGCF courses of M.Sc. Fabric and Apparel Science

(Semester I and II of the One-year programme)

RESEARCH ONLY

List of Courses to be offered to students opting for Structure-3 (Only Research) of M.Sc. in 1st and 2nd Semester of One-Year Course							
Type of Course	Course No.	Semester	Course Title	Credits for each Course			
				Theory	Tutorial	Practical	Total
SEMESTER I							
Discipline Specific Core Course	DSC 1	I	Advancements in Textile and Apparel	3	1	0	4
Discipline Specific Elective Course	DSE 1	I	**From the pool of DSEs given below:** i. Textile Design Development ii. Global Couture iii. Fashion Marketing iv. Advanced Garment Construction v. Advanced Fabric Science vi. Statistics and Data Management	As per the specific course			4
Advanced Research Methodology	ARM 1	I	Advanced Research Methodology	2	0	0	2
Tools for Research	TR 1	I	Tools for Research	2	0	0	2
Dissertation Project/ Entrepreneurship	IP 1	I	Dissertation/Academic project/ Entrepreneurship	0	0	10	10
SEMESTER II							
Discipline Specific Elective Course	DSE 2	II	From the pool DSEs given below	As per the specific course			4
Techniques of Research Writing	TRW 1	II	Techniques of Research Writing	2	0	0	2
Dissertation Project/ Entrepreneurship	IP 2	II	Dissertation/Academic project/ Entrepreneurship	0	0	16	16

Pool of Discipline Specific Elective Courses offered in Semester I				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
i. Textile Design Development	1	0	3	4
ii. Global Couture	3	1	0	4
iii. Fashion Marketing	3	0	1	4
iv. Advanced Garment Construction	3	0	1	4
v. Advanced Fabric Science	3	1	0	4
vi. Statistics and Data Management	3	0	1	4
Pool of Discipline Specific Elective Courses offered in Semester II				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
vi. Commercial Fabrics	3	1	0	4
vii. Women's Wear: Concept to Creation	2	0	2	4
viii. Technical Textiles	3	1	0	4
ix. Psychology of Fashion	3	1	0	4
x. History of Fashion	3	1	0	4
xi. Textile Heritage of India	2	0	2	4
xii. Advanced Textile Colouration	2	0	2	4

Discipline Specific Core Courses

DISCIPLINE SPECIFIC CORE COURSE
ADVANCEMENTS IN TEXTILES AND APPAREL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advancements in Textiles and Apparel	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To learn about the advancements and innovations in textile fibres, yarns and fabric construction methods
- To understand recent technological advancements in textile processing
- To describe the recent developments apparel manufacturing and merchandising
- To understand modern merchandising strategies
- To learn about textile heritage revival and intervention techniques

Learning Outcomes

Students will be able to:

- Develop an understanding of the new advancements in textiles fibres and yarns.
- Evaluate sustainable and eco-friendly processing methods
- Understand CAD/CAM applications, including 3D body scanning and digital prototyping in apparel design.
- Analyze fashion trends, forecasting, branding, and digital marketing.
- Apply modern merchandising strategies using data-driven decisions to improve sales.
- Evaluate sustainability, ethical production, inclusivity, and fast versus slow fashion preferences.
- Critically analyze textile heritage revival strategies and propose research-based interventions that address cultural, economic, and sustainability challenges.

THEORY
(Credits 3; Hours 45)

UNIT I: Innovation in textile fibres, yarns and fabrics **12 Hours**

This unit deals with apprising students about the technologically advanced textile materials, their production, processing, properties and uses. It discusses recent advancements in both natural and man-made textile fibres including agrowaste-based as well as man-made high-

performance fibres. The unit also details the latest innovations in the manufacture of fabrics. The unit further discusses the textile testing and quality control.

- New Natural and Man-made Textile Fibres: extraction, processing and characterisation
- Developments in textile yarns and their production
- Advancements in Fabric construction methods
- Textile testing and quality control

UNIT II: Recent developments in textile processing 10 Hours

This unit covers the latest innovations in textile wet processing, including advanced pretreatments, sustainable coloration technologies, and functional finishes. Students will explore eco-friendly, technology-driven alternatives such as plasma treatment, supercritical CO_2 dyeing, bio-based finishes, and key global sustainability certifications

- Advances in Pretreatments - Surface functionalisation using Plasma and Enzymatic based pretreatments - desizing, scouring, biopolishing
- Developments in colouration - Dyeing with Supercritical CO2, Ultrasonic waves, digital spray dyeing, digital printing, foam dyeing, dyeing with microbial pigments, dyeing with low water/energy/chemicals, Nano based textile coloration, Certifications like Blue sign, Oekotex, REACH, RSL, ZDHC
- Advances in functional finishes - PFC free water/oil repellant finishes, biobased antimicrobial finishes, UV protective finishes, use of ozone for cleaning/ bleaching, use of laser for vintage effects, bio-based coatings

UNIT III: Recent Developments in Apparel Design and Merchandising. 11 Hours

This unit covers the recent developments and advancements in the area of garment manufacturing and merchandising. It discusses application of CAD/CAM, AI, and digital tools in apparel design and production, alongside contemporary fashion trends, forecasting, and digital marketing. It also addresses modern merchandising strategies, equipping students with a holistic understanding of the evolving fashion industry.

- Implementation of CAD/CAM in apparel design and production: 3D body scanning. pattern design system and cutting system, digital prototyping, AI-driven trend analysis, and e-commerce platforms
- Latest trends in National and International Fashion including forecasting, branding, and digital fashion marketing.
- Modern merchandising strategies and data-driven decision-making to improve customer experience and sales.
- Ethical production, circular fashion, and responsible retail strategies
- Analysis of changing consumer preferences, fast fashion vs. slow fashion, inclusivity, and global fashion influences.

UNIT IV: Textile Heritage Revival and its Conservation **12 Hours**

- Textile Heritage as a System
  - Textile ecosystems: artisans, markets, policy, consumers
  - Cultural vs commercial value
  - Mapping stakeholders in textile traditions
  - Decline & Transformation of Textile Crafts- Industrialization, globalization, and fast fashion
  - Loss of skills and generational shifts, Market disconnect and design stagnation

- Conservation vs Revival
  - Static conservation vs dynamic revival
  - Museum-based vs community-based approaches
  - Ethical concerns (ownership, authenticity, appropriation)

- Models of Revival and Ethics
  - Designer-led revival
  - NGO/community-driven initiatives
  - Government intervention
  - Market-driven revival (luxury, export, niche branding)
  - Intellectual property and artisan rights

TUTORIAL

(Credits 1; Hours 15)

1. Conduct a literature review of any one unconventional natural fibre and one high performance man-made fibre, with respect to its chemistry, properties and uses.
2. Prepare a report on the environmental impact of textile wet processing industry in India and suggest measures required to alleviate these impacts.
3. Conduct an interview with a prominent apparel retail chains to understand its merchandising strategy and the extent of use of AI and data driven decision-making strategies for enhancing efficiency.
4. Create a stakeholder map for one textile cluster
5. Compare two traditional textiles crafts —one declining, one thriving to understand causes of decline and transformation
6. Select a textile tradition and conduct a historical and cultural analysis, current status evaluation, stakeholder mapping and identify key challenges and gaps in revival efforts.

Essential Readings

UNIT I

This unit provides a comprehensive overview of recent developments across the textile production pipeline, from fibre to fabric. Students will explore the extraction, processing, and characterisation of new natural and man-made fibres, alongside advancements in yarn production technologies and structures. The unit further examines innovative fabric

construction methods and concludes with an understanding of textile testing protocols and quality control standards essential for ensuring product performance and compliance in the modern textile industry.

- Basu, A. (Ed.). (2024). Developments in yarn spinning technologies. Woodhead Publishing.
- Jiang, S. X., Seidu, R. K., & Tawiah, B. (Eds.). (2025). *Advances in textile materials and processing techniques for sustainability*. Springer.
- Lawrence, C. A. (Ed.). (2010). Advances in yarn spinning technology. Woodhead Publishing.
- Paul, R., & Gries, T. (Eds.). (2024). Sustainable innovations in the textile industry. Woodhead Publishing.
- Rahman, M. M., Mashud, M., & Rahman, M. M. (Eds.). (2023). Advanced technology in textiles: Fibre to apparel. Springer. https://doi.org/10.1007/978-981-99-2142-3

UNIT II

This unit introduces students to the latest innovations in textile wet processing, covering advanced pretreatments, sustainable coloration technologies, and functional finishes. It explores eco-friendly and technology-driven alternatives to conventional methods, including plasma treatment, supercritical CO_2 dyeing, digital printing, bio-based finishes, and PFC-free repellents. The unit also familiarizes students with key global sustainability certifications and compliance standards relevant to the modern textile industry.

- Mahapatra, N. N. (2018). *Modern textile processing*. Abhishek Publications.
- Cavaco-Paulo, A., & Gübitz, G. M. (Eds.). (2003). *Textile processing with enzymes*. Woodhead Publishing.
- Muthu, S. S. (Ed.). (2018). *Sustainable innovations in textile chemical processes*. Springer.
- Jiang, S. X., Seidu, R. K., & Tawiah, B. (Eds.). (2025). *Advances in textile materials and processing techniques for sustainability*. Springer.
- Biranje, S., Shahid, M., & Adivarekar, R. V. (Eds.). (2025). *Sustainable finishing techniques in textiles*. Springer.
- Shahid, M., Biranje, S., Yusuf, M., & Adivarekar, R. V. (Eds.). (2025). *Advancements in textile finishing: Techniques, technologies, and trends*. Springer.

UNIT III

This unit explores the integration of modern technology and contemporary trends in apparel design, production, and retail, covering CAD/CAM systems, 3D body scanning, digital prototyping, and AI-driven tools. Students will examine national and international fashion trends, forecasting, branding, and digital marketing strategies alongside modern merchandising and data-driven decision-making. The unit also addresses ethical production, circular fashion, and evolving consumer preferences, preparing students to navigate the dynamic and responsible future of the fashion industry.

- Diamond, J., & Diamond, E. (2013). *Fashion retailing: A multi-channel approach*. Boston: Pearson
- Fletcher, K. (2014). *Sustainable fashion and textiles: Design journeys*. London: Routledge.
- Jamal, Z., & Arya, N. (2024). *Fashion merchandising: An introduction*. New Delhi: Redgrab Books Pvt. Ltd.
- Smith, S. S. (2013). *CAD for fashion design and merchandising*. New York: Fairchild Books

UNIT IV

- Crill, R. (2015). The fabric of India. Victoria and Albert Museum.
- Dhamija, J. (2002). Textile traditions of India. Har-Anand Publications.
- Ranjan, A., & Ranjan, M. P. (2007). Handmade in India: Crafts of India. National Institute of Design.
- Weiner, A. B., & Schneider, J. (Eds.). (1989). Cloth and human experience. Smithsonian Institution Press.
- India Craft Foundation. (n.d.). Textile and craft documentation. https://www.indiacraftfoundation.org
- Dastkari Haat Samiti. (n.d.). Craft revival and artisan initiatives. https://www.dastkarihaat.org
- Google Arts & Culture. (n.d.). Textiles and craft traditions. https://artsandculture.google.com

Suggested Readings

- Akter, R., Sarker, T. R., Murad, S., & Shaikh, E. (2023). Investigating the effect of fabric design on properties of different weft knit fabrics.
- Muthu, S. S. (Ed.). (2017). *Detox fashion: Sustainable chemistry and wet processing*. Springer.
- Rahaman, M. T. (2026). Advancements in natural fibers for sustainable textile manufacturing: Importance, sources, applications, and future prospects.
- Shahid, M., & Adivarekar, R. V. (Eds.). (2020). *Advances in functional finishing of textiles*. Springer.
- Textile industry and Trade Journal Goregaon (W), Mumbai
- Development Commissioner (Handlooms). (n.d.). Annual reports and handloom sector studies. Government of India.
- UNESCO. (2003). Convention for the safeguarding of the intangible cultural heritage. UNESCO Publishing.
- Crafts Council of India. (n.d.). Reports and publications on Indian crafts.

Note: Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi, from time to time

Discipline Specific Elective Courses

DISCIPLINE SPECIFIC ELECTIVE COURSE
TEXTILE DESIGN DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Textile Design Development	4	1	0	3	As per admission criteria	Nil

Learning Objectives

- To develop an understanding of design elements, principles, forecasting, trend analysis, and design thinking for textile design development.
- To enhance observational and rendering skills through nature drawing, object drawing and motif development.
- To enable students to translate concepts into practical outputs such as motifs, pattern repeats, colour ways and digital textile layouts.
- To build competency in both vector and raster software for digital drawing, motif refinement, seamless repeat creation and product mock-up development.
- To encourage problem-solving, creativity and user-centered thinking by integrating design thinking with hands-on textile product development.

Learning Outcomes

The students would be able to:

- Apply elements and principles of design, forecasting concepts, trend types and design thinking stages in their practical work.
- Create detailed nature and object drawing, rendering and motif variations based on observation and analysis.
- Digitally refine motifs using vector and raster software and convert them into seamless pattern repeats and multiple colour ways.
- Interpret trend and forecast data for colour selection, motif direction and product styling.
- Apply digitally developed patterns to create various textile products.

THEORY

(Credit 1; Hours 15)

UNIT I: Elements and Principles of Design 6 Hours

This unit introduces the elements and principles guiding textile composition. It covers also covers techniques of visual layout and its composition.

- Elements of Design: Line, Colour, Texture, Shape, Form and Space
- Principles of Design: Balance, Rhythm, Proportion, Emphasis, Harmony and Unity
- Visual composition and design thinking basics

UNIT II: Design Context and Application 9 Hours

This unit provides an overview of forecasting and textile trends and discusses major art movements. The unit also details the design thinking process and the development of mood boards and theme boards to visually communicate trend directions and design concepts.

- Trends and Forecasting: Micro, Macro, Fad, Classic, Seasonal
- Major art movements and their textile applications: Renaissance, Baroque, Neoclassicism, Romanticism, Realism, Art Nouveau, Art Deco, Cubism, Futurism, Abstract Expressionism and Pop Art
- Design Thinking Process: Empathize, Define, Ideate, Prototype and Test
- Development of mood boards and theme boards

PRACTICAL

(Credits 3; 90 hours)

1. Nature drawing, object drawing and rendering
2. Development of motif- woven and surface design
3. Forms of motif- Natural, stylized, simplified, geometrical, abstract
4. Vector Based softwares- Coreldraw/Inkscape/any open source software
5. Raster Based softwares- Photoshop/Photopea/any open source software
6. Brain storming, moodboard and theme board
7. Design repeats and colour ways
8. Digital development of seamless patterns
9. Application of digitally developed patterns and repeats to various textile products
10. Design Project: Product development using self created digital patterns*
11.

**Design project should integrate design principles, processes and design thinking to develop a textile design, showcasing skills in design development and execution*.

Essential Readings

UNIT I

This unit introduces the basic elements and principles that form the foundation of textile design. It covers the elements of design—line, colour, texture, shape, form, and space—and explains their role in creating effective textile compositions. The principles of design, including balance, rhythm, proportion, emphasis, harmony, and unity, are discussed in relation to visual organization and layout. The unit also highlights visual composition techniques and distinguishes between the functional and decorative aspects of textile design.

- Brommer, G. F. (2000). *Elements and principles of design: Student guide with activities (Art appreciation ser.)*. Crystal Productions.Lauer, D. A., & Pentak, S. (2012). Design Basics. Cengage Learning.
- Lester, J. (2013). *Visual Research: An Introduction to Research Methodologies in Graphic Design*. Bloomsbury.
- Wong, W. (1993). *Principles of Form and Design.* John Wiley & Sons.
- Zelanski, P., & Fisher, M. P. (2011). *Design Principles and Problems.* Cengage Learning.

UNIT II

This unit introduces the concept of forecasting and its importance in textile and fashion design and explains different types of trends such as micro, macro, fad, classic, and seasonal trends. This unit also provides an overview of major art movements and their influence on design, highlighting the evolution of artistic styles, themes, and techniques across different periods. The unit also focuses on the development of mood boards and theme boards as visual tools to communicate trend directions and design concepts.

- Ambrose, G., & Harris, P. (2011). *Design Thinking*. AVA Publishing.
- Arnason, H. H., & Mansfield, E. C. (2013). *History of Modern Art.* Pearson.
- Bhardwaj, V., & Fairhurst, A. (2021). *Fast Fashion, Sustainability, and the Ethical Appeal of Luxury Brands*. Routledge.
- Brannon, E. L. (2011). *Fashion Forecasting.* Fairchild Books.
- Brown, T. (2009). *Change by Design.* Harper Business.
- Gombrich, E. H. (2006). *The Story of Art.* Phaidon Press.
- Holland, G., & Jones, R. (2017). *Fashion Trend Forecasting*. Laurence King Publishing.
- Honour, H., & Fleming, J. (2009). *A World History of Art.* Laurence King Publishing.
- Jackson, T., & Shaw, D. (2009). *Mastering Fashion Marketing.* Palgrave Macmillan.
- Kaul, M. (1961/Updated Editions). *Trends in Indian Painting: Ancient, Medieval, Modern*. Dhoomimal Ramchand. (Classic Indian text).
- Kelley, T., & Kelley, D. (2013). *Creative Confidence: Unleashing the Creative Potential Within Us All.* Crown Business.

- Liedtka, J., & Ogilvie, T. (2011). *Designing for Growth: A Design Thinking Tool Kit for Managers.* Columbia University Press.
- Naik, Shailaja D. (2010). *CAD in Clothing and Textiles*. New Age International Publishers.
- Plattner, H., Meinel, C., & Leifer, L. (2011). *Design Thinking: Understand – Improve – Apply.* Springer.
- Prakash, V. (2020). O*ne Continuous Line: Art, Architecture and Urbanism of Aditya Prakash.* Mapin Publishing. (Indian context; relevant art/design)
- Raymond, M. (2010). T*he Trend Forecaster's Handbook.* Laurence King Publishing.
- Singh, R. (2023). *Fashion Forecasting and Trend Analysis.* Bloomsbury India. (Indian publication; recent)
- Wilson, J. A. (2001). *A Handbook of Textile Design; Principle, Process and Practice.* (1 ed.) Woodhead Publishing.

Suggested Readings

- Frings, G. S. (2007). *Fashion: From Concept to Consumer* (9th ed.). Prentice Hall.
- Fiell, C., & Fiell, P. (2002). *Graphic Design for the 21st Century*. Taschen.
- Bonnici, A. (2019). *Textile Design Theory in Practice*. Bloomsbury.
- *Eckert, Claudia & McFadden, Margaret (2010). Computer-Aided Design for Fashion and Textiles. Woodhead Publishing.*
- Forecasting Websites- WGSN – *https://www.wgsn.com,* Fashion Snoops – *https://www.fashionsnoops.com,* Pantone Color Institute – *https://www.pantone.com,*
- Softwares- Adobe Photoshop / Illustrator – *https://www.adobe.com,* CorelDRAW Graphics Suite – *https://www.coreldraw.com,* Inkscape – *https://inkscape.org,* Photopea– *https://www.photopea.com*

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DISCIPLINE SPECIFIC ELECTIVE COURSE

GLOBAL COUTURE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Global Couture	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- Understand the evolution and structure of global couture and fashion systems across regions.
- Analyse global fashion markets, value chains, and trade policies that shape international apparel. flows.
- Evaluate the creative, cultural and organisational dynamics of iconic and emerging couture houses and designers.
- Examine contemporary issues in couture, including identity, inclusivity, technology, sustainability and ethics.
- Apply global fashion forecasting tools and trend intelligence to conceptualise couture-oriented design directions.

Learning Outcomes

- Explain major transformations in global couture and identify the role of established and emerging fashion capitals.
- Interpret global sourcing patterns, production geographics, and the impact of WTO and free-trade agreements on fashion markets.
- Critically compare global designers and couture houses, recognising their creative leadership and evolving narratives.
- Analyse how culture, identity, technology, and sustainability concerns shape contemporary couture practices.
- Use forecasting principles and trend platforms to generate trend-based couture concepts supported.

THEORY
(Credits 3; Hours 45)

UNIT I: Global Fashion Systems & Couture Dynamics **12 Hours**

This unit introduces the evolution of global couture and the functioning of international fashion systems. It covers global value chains, trade agreements and the significance of fashion capitals.

- Evolution of global couture
- International fashion markets and global value chains.
- Shifting production geographics, Offshore sourcing and low-cost manufacturing countries.
- WTO and free trade agreements on global apparel trade
- Established fashion capitals: Paris, Milan, New York, London, Tokyo
- Emerging global fashion cities: Seoul, Shanghai, Dubai, Copenhagen, Johannesburg.

UNIT II: Global Designers and Couture Houses **12 Hours**

This unit explores iconic global designers, the development of couture houses and the role of creative leadership. It also examines emerging designers and India's evolving couture ecosystem.

- Iconic global designers: European, American, Japanese, and Asian
- Evolution of couture houses
- Role of creative leadership
- Emerging international designers and new couture narratives
- Indian couture ecosystem: leading and contemporary couturier

UNIT III: Culture, Identity & Contemporary Issues in Couture **11 Hours**

This unit examines how culture, identity and contemporary socio-environmental issues shape global couture. It includes inclusivity, technology-driven couture, sustainability and ethical practices.

- Culture, heritage and identity in global couture.
- Gender-neutral and inclusive couture design
- Technology-driven couture: digital fashion, virtual design and AI.
- Sustainability and environmental challenges in fashion
- Ethical and fair-trade practices

UNIT IV: Global Fashion Forecasting & Trend Intelligence **10 Hours**

This unit provides the fundamentals of forecasting and trend using global trend platforms. It focuses on analysing macro/micro trends and translating them into couture concepts.

- Fundamentals of forecasting and trend theory
- Macro, micro, and seasonal trend development.
- Global trend intelligence platforms: WGSN, Trend Union, Fashion Snoops
- Direction-setting: colours, materials, silhouettes and details.
- Trend interpretation and translation into conceptual couture designs

TUTORIAL

(Credits 1 ; Hours 15)

Visits to haute-couture stores/ production houses and social media platforms. Presentations and projects would be the outcome

1. Technical analysis of works of iconic fashion designers
   Discussion - Trends, elements of design, raw material analysis, constructional analysis
   Class Activity - Secondary data collection of designer's collection and store visits
2. Interpretation of Fashion trends
   Discussion - Identify patterns, social and cultural context, as well as life cycle tracking
   Class Activity - Online information collection and class presentation
3. Use of technology and bioscience in fashion
   Discussion- Use of smart textiles, new generation fibres, recycled fibres, phase change materials etc
   Class Activity - Review and present/ report any designer collection
4. Analysis of designer collections inspired by traditional textile arts
   Discussion- Review of heritage collections on the ramp
   Class Activity - Review and present/ report any designer collection

Essential readings

UNIT 1

This unit introduces the dynamics of fashion movement in the international markets as well as in the production centres. It deals with the technical competencies of low-cost producing countries and how they have become the epitome of production for labour-intensive products, such as garments. It further elaborates on the evolution of historically eminent fashion capitals, as well as the relatively new fashion centres, their characteristic features, and comparative advantages.

- Breward, C., & Gilbert, D. (Eds.). (2006). *Fashion's world cities.* Berg Publishers.
- Fringes G.S. (2007). *Fashion from Concept to Consumer*, 9th edition, Prentice Hall, New Jersey.
- Stone, E. (2013). *The dynamics of fashion (4th ed.)*. Bloomsbury Publishing India.

UNIT II

The proliferation of infrastructural support and creativity to interpret fashion trends has led to the conceptualisation, creation and showcase of landmark collections by various designers across the globe. Iconic designers are known for their unique-selling-proposition, and have built fashion identity which has changed the face of fashion in the socio-cultural context. Together with the team of stylist, merchandisers, and production workforce, many couture houses have developed their collections periodically in systematic fashion seasons. This unit elaborates on the discussion of various couture houses in India as well as internationally.

- Jani, A, Khosla, S. (2000) *India Fantastique Fashion.* Thames and Hudson Publication

- Palomo-Lovinski, N. (2010). *The world's most influential fashion designers: Hidden connections and lasting legacies of fashion's iconic creators.* Barrons Educational Series Inc.
- Troy, N. J. (2002). *Couture culture: A study in modern art and fashion.* MIT Press.

UNIT III

The shaping of fashion as a product is driven by the new age variables which depend on the demographic and technological changes in the marketing environment. There is a distinct shift in consumer behaviour and technological life cycle which are addressed by the designers in order to target a niche in design. These could be "design for inclusivity" or "design for gender neutrality". As climate change and sustainability issues are increasingly gaining momentum, couturiers are further classified and identified with "minimalistic fashion", "ethical fashion" and "sustainable fashion".

- Bowles, H. (2023). I*ndia in fashion- The impact of Indian dress and textiles on the fashionable imagination. NMACC, India*. Rizzoli International Publications
- https://www.lakmefashionweek.co.in/home/sustainability
- https://www.theartsfamily.com/artists/kallol-datta

UNIT IV

The attributes of fashion from acceptance to rejection, are governed by trends which are predicted in a scientific manner by social scientists. They capture the nuances of society and industry in a qualitative as well as quantitative manner and showcase the elements of design in the form of "Trends" which dictate design development. This unit deals with the trajectory of trends, their interpretation for individualistic mood boards and product design. It elaborates on various international agencies 'forecasts, which are followed by the fashion fraternity – textile and fashion designers, producers, visual merchandisers and stylists.

- Holland, G., & Jones, R. (2017). *Fashion trend forecasting.* Laurence King Publishing.
- Kim Eundeok, Fiore A. M. & Hyejeong Kim (2021). *Fashion Trends, 2nd Ed.* Bloomsbury Publication
- https://heuritech.com/fashion-trends-2026/

Suggested Readings

- Barnard, M. (Ed.). (2007). *Fashion theory: A reader.* Routledge.
- Barthes, R. (2006). *The language of fashion (A. Stafford, Trans.).* Bloomsbury.
- Brannon, E. L. (2010). *Fashion forecasting (3rd ed.).* Fairchild Books/Bloomsbury.
- Bowles, H. (2011). *The world of couture.* Abrams.
- R. Andrew, (2018) *Key Concepts for the Fashion Industry*, Bloomsbury Publishing, India.
- Right E. B. (2022). *Vintage Fashion: Collecting and Wearing Designer Classics.* Welbeck Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE COURSE
FASHION MARKETING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Fashion Marketing	**4**	**3**	**0**	**1**	**As per admission criteria**	Nil

Learning Objectives

- To understand the foundational concepts, scope, and significance of fashion marketing in a dynamic market environment.
- To analyze consumer behaviour, market segmentation, targeting strategies, and fashion-specific buying patterns.
- To apply principles of product planning, branding, positioning, and differentiation to fashion products.
- To evaluate pricing strategies and their suitability for diverse product categories and life-cycle stages in the fashion industry.
- To create integrated marketing communication plans using traditional, digital, and influencer-driven promotional tools tailored for fashion brands.
- To develop customer-driven marketing mix strategies and utilize analytical and technological tools to assess digital marketing, e-commerce models, and emerging trends.

Learning Outcomes

Students will be able to:

- Define and explain the key concepts of fashion marketing, market environment, and consumer behaviour.
- Comprehend various consumer behaviour determinants, segmentation bases, and targeting approaches relevant to fashion markets.
- Apply product planning concepts, including product mix, product life cycle strategies, positioning, brand elements and branding strategies to real-world fashion scenarios.
- Evaluate new-product pricing, product-mix pricing, and pricing adjustment strategies appropriate for fashion products.
- Design and assess integrated marketing communication (IMC) strategies incorporating advertising, digital media, influencers, stylists, and content creators as well as digital marketing tools.

THEORY

(Credits 3; 45 Hours)

UNIT I: Understanding Marketing Management and Consumer Behaviour 12 Hours

This unit introduces the fundamentals of marketing environment, segmentation, and targeting. It covers key consumer behaviour concepts and the buying decision process.

- Importance and scope of Marketing
- Analysing marketing environment
- Market segmentation and targeting
- Consumer Behaviour Analysis
- Factor Influencing consumer Behaviour
- Type of buying decision behaviour
- Buying decision process

UNIT II: Product Planning and Branding 13 Hours

This unit explores product mix, product life cycle, and differentiation strategies and introduces branding elements and strategies used by fashion brands.

- Product line, Product mix and Product classification
- Product life cycle and strategies
- Product positioning and Differentiation strategies
- Brand elements-tangible, intangible
- Branding Strategies

UNIT III: Pricing 8 Hours

This unit covers essential pricing strategies for new and existing products, product mix pricing and price adjustment strategies in the fashion market.

- New Product Pricing strategies
- Product mix pricing strategies
- Pricing adjustment strategies

UNIT IV: Marketing Communication and Promotion 12 Hours

This unit presents integrated marketing communication and promotion techniques and also focuses on digital marketing for fashion brands.

- Integrated marketing communication strategy

- Development and managing advertising programs
- Sales promotion and Personal selling
- Marketing in the digital world

  – Concept and features
  – Key digital channels: Content and Email marketing, Social media marketing for fashion brands
  – Role of influencers

PRACTICAL
(Credit 1; Hours 30)

1. Analysis of Demographics of Indian market
2. Lifestyle segmentation (VALS) in fashion industry
3. Idea generation for a new product
4. Brand study

   – Tangible and Intangible elements
   – Brand Portfolio
   – Brand Positioning and Differentiation

5. Review product pages from leading e-commerce platforms with respect to Fabric specifications, Fit guides and sizing tools, High-resolution imagery and videos, User-generated reviews
6. Analysis of AI shopping assistants in E-commerce

Essential Readings

UNIT 1:

This unit provides an overview of marketing management principles with specific reference to the fashion sector. It familiarizes students with the scope and relevance of marketing and examines how internal and external environmental factors influence marketing decisions. The unit also introduces market segmentation and targeting approaches. The unit also gives in-depth insight into consumer behaviour, exploring various factors influencing consumers, along with different buying decision patterns and stages, enabling learners develop the ability to analyze consumer behaviour.

- Babu, Ramesh V., Arunraj A. (2025) *Fashion Marketing Management: WPI* (chapter 1-2)
- Schiffman, L. G. & Wisenbilt, J. (2019) Consumer Behaviour 12th Ed.: Pearson
- Easy, M. (2020) *Fashion Marketing* (4th Edition, chapter 1-5) Wiley-Blackwell

- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chapter 1-3)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management (*17h*ed.*, chapters 1-4, 6) Pearson.
- Posner, H. (2021) *Marketing Fashion: Strategy, branding and promotion* (3rd Ed. Chapter 1,2,4) Laurence King Publishing

UNIT II:

This unit examines the strategic planning and management of fashion products and brands. It introduces key concepts related to product lines, product mix, and product categorization, along with an analysis of product life cycle stages and associated strategies. The unit highlights the importance of positioning and differentiation in creating market distinction. It further explores branding by identifying both tangible and intangible brand elements and reviews various branding approaches used by fashion organizations to establish identity, credibility, and customer loyalty.

- Babu, Ramesh V., Arunraj A. (2025) *Fashion Marketing Management*: WPI (chapter 3)
- Easy, M. (2020) *Fashion Marketing* (4th Edition, chaps 5-6) Wiley-Blackwell
- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chapter 3, 4, 8)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management* (17h*ed.*, chaps7-11) Pearson.
- Posner, H. (2021) *Marketing Fashion: Strategy, branding and promotion* (3rd Ed., chap 5) Laurence King Publishing

UNIT III:

This unit focuses on pricing decisions as a vital component of fashion marketing strategy. It addresses pricing approaches adopted for new product launches as well as for existing product lines. The unit also discusses product mix pricing and different pricing adjustment methods employed to suit changing market demands and consumer segments. Through this study, students gain insight into how pricing influences consumer perception, market competitiveness, and overall brand performance.

- Easy, M. (2020) *Fashion Marketing* (4th Edition, chapter 7) Wiley-Blackwell
- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chapter 5)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management* (17h*ed.*, chapter 12) Pearson.
- Babu, Ramesh V., Arunraj A. (2025) *Fashion Marketing Management: WPI* (chapter 8)

UNIT IV:

This unit explores the role of communication and promotional activities in building and sustaining fashion brands. It introduces the concept of integrated marketing communication and examines the planning and execution of advertising programs. The unit also covers sales

promotion techniques and personal selling practices. Additionally, it emphasizes the growing importance of digital marketing, outlining its key characteristics and major digital channels such as content marketing, email marketing, and social media platforms. The influence of digital opinion leaders and influencers on fashion consumers is also analyzed.

- Belch, E. G. and Belch, A.M. (2003). Advertising and Promotion- An integrated marketing communications perspective 6th Ed.: Tata McGraw-Hill publishing company ltd
- Easy, M. (2020) *Fashion Marketing* (4th edition, chap 9) Wiley-Blackwell
- Barker, M., Barker, D., Bormann, N., & Neher, K., (2017) *Social Media Marketing*: A strategic approach 3rd Ed. : Cengage Learning India Pvt. Ltd
- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chap 6)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management* (17h edition, chaps13-17) Pearson.
- Posner, H. (2021) *Marketing Fashion: Strategy, branding and promotion* 3rd Ed.: Laurence King Publishing (chap 6)

Suggested Readings

- Chaffey, D., & Ellis-Chadwick, F. (2019) *Digital Marketing* 7th Ed.: Pearson
- Sachdeva, Nidhi. (2018) *Fashion: Marketing, Merchandising and Buying.* Heritage Publishers
- Diamond, J., Diamond, E. and Litt, S.D. (2006) *Fashion Retailing- A Multi- Channel Approach*: Bloomsbury Publishing Inc.
- Jackson, T., & Shaw, D. (2001) *Fashion Retail* : Palgrave Macmillan
- Jain, J.N. and Singh, P.P. (2007) *Modern Marketing Management- Principles and Techniques*. New Delhi: Regal Publications.
- Poloian, G.L.(2009). Multichannel Retailing : Fairchild Books-New York.
- Posner, H. (2015) Fashion buying 3rd Ed. : Wiley

Note: Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE
ADVANCED GARMENT CONSTRUCTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Garment Construction	4	2	0	2	As per admission criteria	Introductory Course in Garment Design and Construction

Learning Objectives

- To understand terminology, tools, dress forms, and fabric selection for draping.
- To apply draping principles and processes to develop accurate balanced patterns.
- To develop advanced patterns for bodice, skirt, and sleeve variations and apply fundamentals of grading.
- To identify and handle specialty fabrics with appropriate seams and finishes.

Learning Outcomes

The students would be able to:

- Demonstrate proficiency in using dress forms and draping tools.
- Drape and develop balanced draped basic patterns and their variations.
- Construct style variations for bodice, skirt, and sleeve designs and apply basic grading techniques.
- Handle specialty fabrics effectively and apply appropriate seam and finishing techniques.

THEORY

(Credits 2; Hours 30)

UNIT I: The Dress Form, Tools and Draping Terminology **4 Hours**

This unit introduces draping terminology, tools, materials and different dress forms. The unit also emphasizes impact of fabric characteristics and grain direction on the fall and balance of a garment.

- Draping terminology, tools, and essential supplies
- The dress form and specialty forms: types and uses
- Fabric selection considerations: hand, appearance, texture, weight

- Understanding grainlines (lengthwise, cross-grain, bias)

UNIT II: Draping Principles and Process **5 Hours**

This unit focuses on the principles and skills of draping; step by step draping process for achieving balanced and accurate patterns. The unit also highlights identification of design details, fabric planning, and innovative zero-waste draping strategies.

- Fundamentals of draping: principles and skills
- Identification of design details; fabric calculation and preparation
- Draping process, marking, trueing, blending seam lines, adding seam allowances
- Principles of balanced patterns
- Zero-waste draping approaches

UNIT III: Advanced Pattern Development and Grading **12 Hours**

This unit focuses on advanced pattern development for creating complex bodice, skirt, and sleeve variations. It also introduces the fundamentals of grading.

- Bodice- Surplice (wrap), off-shoulder, halter, cowls and strapless princess foundation
- Skirts- Pegged skirt with pleats and skirt with godets
- Sleeves- Sleeves with extended cap, wedding sleeve, kimono, raglan and drop shoulder
- Grading- terminology, methods and types of grading

UNIT IV: Handling Specialty Fabrics and Seam Variations **9 Hours**

This unit introduces handling specialty fabrics, addressing challenges in cutting, stitching, finishing, and selecting suitable seam variations for effective construction.

- Specialty Fabrics
    - Furs and feathers
    - Stretch fabrics and knits
    - Sheer and open weave
    - Laces and nets
    - Napped and pile
    - Occasional wear fabrics
- Seam variations and their applications

PRACTICAL

(Credits 2; 60 hours)

1. Draping the basic bodice and developing bodice style variations

2. Draping the basic skirt block and creating skirt style variations (with pleats, flare, yokes, panels, circularity, wraps, asymmetry)

3. Manual grading of a basic bodice and skirt pattern

4. Preparation of a specialty-fabric swatch book (handling precautions, appropriate needle and thread, seam type and finishing methods)

5. Construction of seam variation samples

Essential Readings

UNIT I

This unit introduces the fundamentals of draping, focusing on basic draping terminology, tools, and essential supplies used in garment construction. Students learn about different types of dress forms, including standard and specialty forms, and their appropriate uses. The unit highlights the importance of fabric selection by examining characteristics such as hand, appearance, texture, and weight, and how these affect the fall and balance of garments. It also provides an understanding of grainlines—lengthwise, cross-grain, and bias—and their role in garment fit, structure, and overall drape.

- Amaden-Crawford, C. (2018). *The art of fashion draping* (5th ed., chaps. 1–2). Fairchild Books.
- Jaffe, H., & Relis, N. (2011). *Draping for fashion design* (5th ed., chaps. 1–2). Pearson Education.
- Joseph-Armstrong, H., & Ashdown, S. P. (2022). *Draping for apparel design* (4th ed., chaps. 1–3). Bloomsbury Publishing.
- Kiisel, K. (2020). *Draping: The complete course* (2nd ed., unit 1). Laurence King Publishing.
- Paul, D., & Verreos, N. (2024). *The fundamentals of fashion draping*. Nikolaki, Inc. ISBN 9780999454343.

UNIT II

This unit develops an understanding of the core principles and skills required for effective draping. It guides students through the step-by-step draping process to achieve accurate, well-balanced patterns. Emphasis is placed on identifying design details, planning fabric requirements, and preparing materials before draping. Students learn essential processes such as marking, trueing, blending seam lines, and adding seam allowances to convert draped muslin into usable patterns. The unit also introduces principles of balanced pattern development and explores innovative zero-waste draping approaches, encouraging efficient fabric use and sustainable design thinking.

- Amaden-Crawford, C. (2018). *The art of fashion draping* (5th ed., chaps. 1–5). Fairchild Books.

- Helmersson, B. (2023). *Zero waste patterns*. Quadrille Publishing.
- Joseph-Armstrong, H., & Ashdown, S. P. (2022). *Draping for apparel design* (4th ed., chaps. 4–9). Bloomsbury Publishing.
- Kiisel, K. (2020). *Draping: The complete course* (2nd ed., units 1–3). Laurence King Publishing.
- Rissanen, T., & McQuillan, H. (2023). *Zero waste fashion design* (2nd ed., chaps. 2–5: Zero-waste design methods and fabric planning). Bloomsbury Visual Arts.

UNIT III

This unit focuses on advanced pattern development techniques for creating complex garment styles. Students learn to develop and modify bodice patterns such as surplice (wrap), off-shoulder, halter, cowl, and strapless princess foundations with emphasis on fit and structure. The unit also covers skirt variations including pegged skirts with pleats and skirts with godets, highlighting volume and movement. Advanced sleeve designs such as extended cap, wedding, kimono, raglan, and drop-shoulder sleeves are explored. Additionally, the unit introduces grading fundamentals, including basic terminology, methods, and types used for size adaptation and production.

- Handford, J. (2015). *Pattern grading for women's, men's, and children's apparel*. Wiley.
- Joseph-Armstrong, H. (2021). *Patternmaking for fashion design* (5th ed., chaps. 4–6, 13–15, 19). Pearson Education.
- Mullet, K. K. (2018). *Concepts of pattern grading*. Fairchild Books.
- Parish, P. (2020). *Pattern cutting: The architecture of fashion*. Bloomsbury Publishing.

UNIT IV

This unit introduces techniques for handling specialty fabrics, including furs, feathers, stretch fabrics, knits, sheer and open weaves, laces, nets, napped and pile fabrics, and occasional wear textiles. It addresses challenges in cutting, stitching, and finishing these materials. Emphasis is placed on understanding fabric behaviour and selecting suitable seam variations to ensure proper construction, durability, flexibility, and aesthetic appeal in garments made from specialty fabrics.

- Amaden-Crawford, C. (2023). *A guide to fashion sewing* (7th ed.). Bloomsbury Publishing.
- Amaden-Crawford, C. (2024). *Fashion sewing: Advanced techniques*. Fairchild Books.
- Baugh, G. (2019). *The fashion designer's textile directory: A guide to fabrics' properties, characteristics, and garment-design potential*. Bloomsbury Publishing.
- Czachor, S. (2019). *Sewing with knits and stretch fabrics*. Fairchild Books.
- Shaeffer, C. (2014). *Sewing for the apparel industry*. Pearson Education.
- Shaeffer, C. (2008). *Fabric Sewing Guide*. Krause Publications. Cincinnati

Suggested Readings

- Almond, K. (2017). *Basics Fashion Design: Draping*. Bloomsbury Publishing.

- Amaden-Crawford, C. (2015). *Guide to Fashion Sewing* (6th ed.). Fairchild Books.
- Brown, P., & Rice, J. (2014). *Ready to wear apparel analysis* (4th ed.). Pearson Education. New Delhi
- Glock, R. E., & Kunz, G. I. (2014). *Apparel Manufacturing: Sewn Product Analysis* (5th ed.). Pearson.
- Keiser, S. J., & Garner, M. B. (2012). *Beyond Design: The Synergy of Apparel Product Development.* Fairchild Books.
- Mehta, R. (2015). *Practical Pattern Making*. CBS Publishers.
- Smith, K. (2012). *Sewing Techniques and Finishes*. Barron's.
- Udale, J. (2014). *Creative Draping*. Laurence King Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE COURSE
ADVANCED FABRIC SCIENCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Fabric Science	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To provide students with the knowledge of the structure, production and properties of natural and synthetic fibres.
- To familiarize them with the various yarn and fabric production techniques.
- To learn about the various standards, quality marks and labels in textiles and to understand the process of assurance of quality in textiles.

Learning Outcomes

Students will be able to:

- Understand the structure and production techniques of various natural and manmade fibers and their physical properties.
- Identify and explain the various conventional and non-conventional techniques of yarn spinning.
- Demonstrate an understanding of various types of fabric forming methods.
- Gain knowledge about quality parameters for fibre, yarn and fabrics.

THEORY
(Credits 3; Hours 45)

UNIT I: Textile Fibres **18 Hours**

In this unit, the students will learn about the chemical composition, morphology, chemical and physical properties of selected textile fibres.

- Natural fibers- Cotton, Flax, Silk, Wool
- Man-made fibers- Rayon, Acetate, Nylons, Polyester, Acrylic, Modacrylic, Olefins, Aramids, Elastomeric, Carbon fiber, Glass fiber.
- Physical properties of textile fibre and their relationship to the polymer structure: Tensile, Moisture, Thermal, Optical and Electrical Properties

UNIT II: Yarn Manufacturing **8 Hours**

This unit will discuss various yarn production techniques and yarn characteristics.

- Conventional and non-conventional spinning methods
- Yarn properties and their implications on quality: Fineness, Evenness, Yarn count, Yarn crimp, Yarn twist
- Yarn Texturisation- Purpose and Methods of Texturisation

Unit III: Weaving **9 Hours**

This unit will elaborate on the production of woven fabrics and the detailed working of a loom.

- Weaving
    - Weaving operations
        - Yarn preparation for weaving
        - Shedding- Tappet, Dobby, Jacquard shedding mechanisms
        - Picking mechanisms
        - Beat-up mechanisms
        - Secondary and auxiliary loom motions
    - Types of Looms – Shuttle and Shuttle-less
    - Design interpretation and representation- draft and peg plan
- Complex woven constructions: Triaxial, Multiaxial Fabrics etc.

UNIT IV: Knitting, Non-wovens and Other Fabric Construction Techniques **10 Hours**

In this unit, the students will learn fabric production through other significant fabric productions methods such as knitting, non-wovens etc.

- Knitting
    - Basics of Knitting- Terminology, Types of stitches
    - Knitting machines
    - Types of Knitted fabric and their properties: Warp and Weft knits Knitwear production techniques
- Non-woven
    - Production of non-woven
    - Types of non-woven fabrics and their properties
- Other techniques of Fabric production
    - Laces
    - Nets
    - Fibre reinforced composites

TUTORIAL

(Credits 1; Hours 15)

1. Comparison between Woven, Knitted and Non-Woven Fabrics

Discussion: Differentiation between various types of fabric in terms of properties and prices
Activity: Visits to stores/ markets to procure samples for recognition and differentiation

2. Spinning, weaving and knitting

Discussion: Processes and machinery being used for these units
Activity: Plan visits to the units to understand the processes and machinery being used. Students will make a detailed report of the units visited.

3. Woven Design interpretation and representation

Discussion: Making of Draft plans and peg plan to be explained
Activity: Students to prepare weave plan, draft and lifting plan for various woven fabric samples

4. Knitwear Production

Discussion: Various types of knitted fabrics and knitwear production techniques
Activity: Students to carry out a market survey of various different types of knitted fabrics and identify various knitwear production methods.

5. Non-woven fabrics

Discussion: Types of non-woven fabrics, their properties and end use
Activity: Market survey of various types of non-woven and their area of application

6. Nets and Laces

Discussion: Types of laces and nets
Activity: Market survey of various types of laces and nets and a building a swatch file

Essential Readings:

UNIT I
This unit introduces students to natural and man-made fibres, explaining their sources, structure, production techniques and basic characteristics. It will also help the students understand various pphysical properties of textile fibres such as tensile, moisture, thermal, optical and electrical and their relationship to the polymer structure.

- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapters 1-3.
- Saville, B.P. (2000) Physical Testing of Textiles, Textiles Institute
- Gohl, E. P. G. and Vilensky, L. D. (1983) *Textile science*. Melbourne: Longman Cheshire. Chapters 1-5.
- Sekhri S. (2016) *Textbook of Fabric Science: Fundamentals to Finishing*, 2E, Delhi: PHI Learning Private Ltd. Chapters 1-8.

UNIT II
This unit will introduce various conventional and non-conventional methods of yarn production. Students will also learn about the yarn properties and their implications on quality. The unit will also cover various methods of yarn texturisation.

- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapter 4.

- Sekhri S. (2016) *Textbook of Fabric Science: Fundamentals to Finishing*, 2E, Delhi: PHI Learning Private Ltd. Chapters 9-10.

UNIT III

This unit covers details of production of woven fabrics including details working of the loom, yarn preparation for weaving and the detailed process of the weaving operations. The students will learn about the shedding, picking and beating up mechanisms along with the primary and secondary motions of the loom. Various shuttle and shuttle less looms and preparation of draft and peg plans will also be introduced.

- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapters 6-8.
- Schwartz, P. (1979) *Fabric Forming Systems*, School of Textiles, North Carolina State University.
- Sekhri S. (2016) *Textbook of Fabric Science: Fundamentals to Finishing*, 2E, Delhi: PHI Learning Private Ltd. Chapters 11-13.

UNIT IV

This unit will cover the basics of knitting and non-wovens production. It includes structure of knitted fabrics, their properties. It also includes, types of knitting machines, their parts and working. Students will also learn about detailed production techniques of non-woven fabrics.

- Brackenbury, T. (1988). *Knitted clothing technology* (1st ed.). Blackwell Science.
- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapters 6-8.
- Schwartz, P. (1979) *Fabric Forming Systems*, School of Textiles, North Carolina State University.
- Spencer, D.J. (2005) *Knitting Technology: A Comprehensive Handbook and Practical Guide*, 4th ed. Cambridge: Woodhead Publishing.

Suggested Readings

- Bhardwaj, S.K. and Mehta, P.V. (1998) Managing Quality in the Apparel Industry, New Delhi, New Age International
- Booth, J. E. (1982) Principle of Textile Testing, Meanness Butter worth scientific, London
- Brackenbury, T. (2005). *Knitting Clothing Technology*, Blackwell Science Publishers
- Eric, O. (1975). *Spun Yarn Technology*, Butterworth Publication.

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DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1	As per admission criteria	Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics **12 Hours**

This unit will introduces the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions **10 Hours**

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous variable
- Binomial, Poisson and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression **8 Hours**

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods **15 Hours**

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - ANOVA- One way
    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test

- Interpretation and reporting of statistical results
- Research Conclusion and recommendation

PRACTICAL

(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).

- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Sage.

UNIT IV

The unit deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

Note: Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE COURSE

COMMERCIAL FABRICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Commercial Fabrics	**4**	**3**	**1**	**0**	**As per admission criteria**	**Nil**

Learning Objectives

- To develop a foundational understanding of textile fibres, yarns, and fabric construction methods.
- To enhance the knowledge of commercially available fabrics, their properties, and identification techniques.
- To analyse fabric performance, finishes, and suitability for different end uses.
- To equip the students with skills to select appropriate fabrics based on structure, appearance, cost, and application.

Learning Outcomes

Students will be able to:

- Understand the fundamental components, structure, and construction of different fabrics.
- Identify and distinguish between various woven, knitted, non-woven, and traditional Indian textiles.
- Analyse fabric properties, finishes, and end uses for appropriate selection in apparel and textiles.
- Apply practical knowledge to evaluate fabric samples, market options, and industry trends.

THEORY
(Credits 3; Hours 45)

UNIT I: Components of Fabric Structure **10 Hours**

- Fibres and yarns
- Methods of fabric construction
- Fabric finishing: dyeing, printing, and functional/aesthetic finishes
- Sustainability and chemical compliance standards (OEKO-TEX, REACH, GOTS, GRS, BCI, Blusign, RCS)

UNIT II: Commercially Important Woven Fabrics – Identification, Properties & End Uses **12 Hours**

- Cellulosic fabrics: Mulmul, Voile, Organdy, Cambric, Poplin, Cotton, Canvas, Denim, Casement, Terry, etc.
- Silk and wool fabrics: Silk crepe, Georgette, Chiffon, Organza, Satin, Taffeta, Tweed, Tussar, Wool twill, etc.
- Man-made and blended fabrics: Art silk, Lycra blends, Polyester, Viscose, Moss crepe, Georgette, etc.

UNIT III: Commercially Important Knitted & Non-Woven Fabrics – Identification, Properties & End Uses **12 Hours**

- Knitted fabrics: Terry knit, Jersey, Rib knit, Interlock knit, Piqué, Velour, etc.
- Non-woven fabrics: Types, weights, and applications
- Others: Leatherette, Suede

UNIT IV: Traditional Indian Fabrics – Identification, Characteristics & Uses **11 Hours**

- Embroideries: Kantha, Phulkari, Chikankari, Kasuti, Kutch, etc.
- Woven fabrics: Brocade, Jamdani, Baluchari, Chanderi, Maheshwari, Kanjeevaram, etc.
- Dyed/Printed fabrics: Bandhani, Kalamkari, Ikat, Patola, Dabu prints, Ajrakh prints, etc.

TUTORIAL

(Credits 1; 15 hours)

1. Examine and differentiate various natural, man-made, and blended fibres and yarns based on appearance, feel, and basic properties.
2. Collect and classify commonly used woven fabrics, noting their weave type, characteristics, and typical applications.
3. Assemble samples of knitted fabrics and identify structural variations such as single jersey, rib, interlock, and pique.
4. Gather samples of non-woven materials and study their methods of manufacture, features, and end uses.
5. Observe and document different construction methods such as weaving, knitting, braiding, and felting, highlighting their influence on fabric performance.
6. Explore selected Indian traditional fabrics, understanding their motifs, techniques, regional specialties, and cultural significance.
7. Prepare and present a brief report analysing selected fabrics in terms of fibre content, construction, properties, finishes, and suitable end-uses

Essential Readings

UNIT I

This unit covers the basic building blocks of textiles including fibres, yarns, fabric construction methods, and finishing processes. Emphasis is also placed on sustainability, eco-labels, and chemical compliance standards followed in the Indian and global textile industry

- Corbman, B. P. (2016). Textiles: Fiber to fabric (6th ed.). McGraw-Hill Education.
- Kadolph, S. J. (2017). Textiles (12th ed.). Pearson Education.
- Gohl, E. P. G., & Vilensky, L. D. (2013). Textile science: An explanation of fibre properties (2nd ed.). CBS Publishers & Distributors.
- Majumdar, P. K. (2010). Textile fibres. PHI Learning.
- Fletcher, K., & Grose, L. (2012). Fashion & sustainability: Design for change. Laurence King.

UNIT II

This unit introduces commonly used woven fabrics made from natural, man-made, and blended fibres, focusing on their identification, properties, and suitability for various end uses in apparel and home furnishings.

- Hatch, K. L. (2018). Textile science. Bloomsbury Publishing.
- Tortora, P. G., & Johnson, I. (2019). The Fairchild books dictionary of textiles (9th ed.). Bloomsbury.
- Banerjee, S. (2011). Textile science fundamentals. PHI Learning.
- Corbman, B. P. (2016). Textiles: Fiber to fabric. McGraw-Hill Education.

UNIT III

This unit deals with basic knit structures, types of knitted fabrics, non-woven textiles, and their properties, applications, and performance characteristics in apparel and technical textiles.

- Spencer, D. J. (2018). Knitting technology (4th ed.). Woodhead Publishing.
- Russell, S. (2016). Handbook of nonwovens. Woodhead Publishing.
- Anbumani, N. (2007). Knitting fundamentals, machines, structures and developments. New Age International.
- Ajmeri, J. R., & Ajmeri, C. J. (2016). Nonwoven textiles: Technology. New India Publishing Agency.
- Hearle, J. W. S., & Morton, W. E. (2008). Physical properties of textile fibres. Woodhead Publishing.

UNIT IV

This unit focuses on traditional Indian textiles including embroideries, woven fabrics, and surface-designed textiles, highlighting regional diversity, techniques, cultural importance, and contemporary relevance.

- Chattopadhyay, K. (2019). Indian textiles. Wiley Eastern.
- Biswas, K. (2018). Textiles of India. National Book Trust.
- Dhamija, J. (2004). Craft traditions of India. National Handicrafts & Handlooms Museum.

- Varadarajan, L. (2015). Indian costume and textiles. Prentice Hall of India.

Suggested Readings

- Jain, J., & Jain-Neubauer, J. (2015). *The spectrum of Indian textiles.* Niyogi Books
- Gillow, J., & Barnard, N. (2015). *Traditional Indian textiles*. Thames & Hudson.
- Rastogi. D(Ed)and Chopra S. (Ed)(2017) *Textile Science*, India : Orient Black Swan.
- Sekhri S. (2011) *Textbook of Fabric Science: Fundamentals to Finishing*, Delhi: PHI Learning

DISCIPLINE SPECIFIC ELECTIVE COURSE
WOMEN'S WEAR: CONCEPT TO CREATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Women's Wear: Concept to Creation	4	2	0	2	As per admission criteria	Nil

Learning Objectives

- To gain an understanding and knowledge of the industry involved in women's wear.
- To develop skills in designing a theme-based collection of garments for women's wear.
- To apply advanced pattern making and construction techniques for women's wear.
- To understand the role of fashion accessories in complementing the outfit.

Learning Outcomes

The students would be able to:

- Understand the market involved in women's wear.
- Comprehend the components of design and their application for line development
- Independently design a line for women's fashion wear
- Describe the role of fashion accessories in defining the overall look.

THEORY
(Credit 2; 30 Hours)

UNIT I: Introduction to Women's Wear **6 Hours**

This unit introduces the student to the growth and development of women's wear industry.

- Scope and significance of Women's wear within the fashion industry
- Classification of women's wear: western/ethnic / fusion / contemporary; formal/casual; occasion wear, resort wear, intimate wear, maternity, plus-size etc.
- Key eras shaping women's fashion and global influences
- Market segmentation in women's wear based on pricing strategies, brand tiers (Haute couture, luxury, diffusion, high street etc.)

UNIT II: Research, Trends & Concept Development **10 Hours**

This unit covers the process of trend forecasting and the understanding of consumer profiles. It also helps in building the concept story for line development.

- Trend forecasting- steps, drivers of change: socio-cultural, technological, economic, environmental, forecasting agencies, fashion seasons
- Consumer types and profiling based on demographics, psychographics, lifestyle etc.
- Building a concept story for line development- design idea/inspiration, mind map, theme/mood board
- Translating concept into colours, silhouettes, design details, textures, fabrics

UNIT III: Product Development and Presentation **6 Hours**

This unit focuses on line planning and design sketching, leading to product development and its presentation.

- Line planning and range development
- Pattern making, fabric sourcing, garment prototype and fit analysis, garment costing
- Design documentation and presentation of line/collection: Lookbooks, runway, digital presentation, collection storytelling, visual strategies

UNIT IV: Fashion Accessories for Women **8 Hours**

This unit gives an overview of various accessories used to complete an overall look in women's fashion.

- Scope and role of accessories in completing the look
- Types of accessories- bags, purses, footwear, scarves and stoles, hats, gloves, hosiery, jewellery, watches and belts
- Materials and components used in accessories

PRACTICAL
(Credit 2; 60 Hours)

1. Design inspiration for line development and working on a mind map
2. Development of Theme/mood board and story board including colours, silhouettes, textures, fabrics, motifs, design details
3. Line planning, customer profile, sketching, and finalization of design collection based on the theme
4. Developing patterns for two of the above selected designs using flat pattern making or draping and planning pattern layout, preparation of Teck-pack
5. Fabric sourcing, cutting and stitching of the garments, incorporating advanced sewing skills
6. Fit evaluation and finalization, portfolio presentation

Essential/Recommended Readings

UNIT I:

This unit introduces students to the growth, scope, and importance of women's wear within the fashion industry. It covers the classification of women's apparel based on style, function, and consumer needs, including western, ethnic, fusion, formal, casual, and specialized categories. The unit examines key historical eras and global influences shaping women's fashion. It also provides an understanding of market segmentation, pricing strategies, and brand tiers such as haute couture, luxury, diffusion, and high-street fashion.

- Brown, P., & Rice, J. (2014). *Ready to wear apparel analysis* (4th ed.). Pearson Education. New Delhi
- Dickerson, K. G. (2007). *Inside the fashion business*. Upper Saddle River, NJ: Pearson Education, Inc.
- Frings, G. S. (2014). *Fashion: From Concept to Consumer* (10th ed.). Pearson Education.
- Tate, S. L., & Edwards, M. S. (2003). *Inside fashion design* (5th ed.). Pearson Education, Inc..

UNIT II:

This unit focuses on the research-driven design process essential for women's wear development. Students learn the principles of trend forecasting, including drivers of change and fashion cycles. The unit emphasizes consumer profiling through demographic, psychographic, and lifestyle analysis. It also develops skills in concept creation, enabling students to translate inspiration into cohesive design ideas using mood boards, colour stories, silhouettes, fabrics, and textures.

- Dragt, E. (2017). *How to Research Trends: Move Beyond Trendwatching to Kickstart Innovation*. BIS Publishers.
- Raymond, M. (2010). *The Trend Forecaster's Handbook*. Laurence King Publishing.
- Renfrew, E., & Renfrew, C. (2009). *Basics fashion design 04: Developing a collection*. Switzerland: Ava Publishing SA.
- Stamper, A. A., Sharp, S. H., & Donnell, L. B. (2005). *Evaluating apparel quality*. New York, NY: Fairchild Fashion Group.

UNIT III:

This unit introduces students to the product development process from concept to finished collection. It covers line planning, range development, and design translation into garments. Students gain foundational knowledge of pattern making, fabric sourcing, prototyping, fit analysis, and garment costing. The unit also emphasizes professional presentation techniques, including design documentation, lookbooks, collection storytelling, and digital or runway presentations.

- Armstrong, H. J. (2019). *Patternmaking for Fashion Design* (6th ed.). Pearson Education
- Brannon, E. L. (2011). *Designer's guide to fashion apparel*. New York, NY: Fairchild Books.
- Glock, R. E., & Kunz, G. I. (2014). *Apparel Manufacturing: Sewn Product Analysis* (5th ed.). Pearson.
- Hopkins, J. (2013). *Fashion Design: The Complete Guide*. AVA Publishing.
- San Martín, M. (2009). *Field guide: How to be a fashion designer*. Beverly, MA: Rockport Publishers.

UNIT IV:

This unit provides an understanding of the role of fashion accessories in enhancing and completing women's wear. It explores various types of accessories, including bags, footwear, scarves, jewellery, belts, and watches. The unit introduces materials, components, and construction considerations used in accessory design. Emphasis is placed on the aesthetic, functional, and market relevance of accessories within contemporary women's fashion.

- Dhir, Y.J. (2024). *Fashion Accessories: A Complete Guide to Raw Materials, Construction Methods and Styles* (1st ed.). CRC Press.
- Jones, S. J. (2011). *Fashion Design: Accessories*. Laurence King Publishing.
- Lau, J. (2021). *Basics fashion design 09: Designing accessories: Exploring the design and construction of bags, shoes, hats and jewellery*. Bloomsbury Publishing.
- Tortora, P. G., & Abling, B. (2003). *Encyclopaedia of Fashion Accessories*. Fairchild Books.

Suggested Readings

- Abling, B. and Maggio K. (2008) Integrating Draping, Drafting and Drawing, ISBN: 9781563674860, Fairchild books.
- Aldrich, W. (2008) Metric Pattern Cutting for Women's Wear, ISBN 10: 1405175672 / ISBN 13: 9781405175678, Wiley Blackwell Publication.
- Crawford. C.A. (2008), A Guide to Fashion Sewing, Fourth Edition. Fairchild Publications, Inc., New York.
- Crawford. C.A. (2018), The Art of Fashion Draping, ISBN: 9781501330292, Fairchild books.
- DiMarco, S., (2010) Draping Basics, ISBN: 9781563677366, Fairchild books.
- Fogg, M. (2013) Fashion The Whole Story. Thames & Hudson Ltd., London.
- Shoben, M.M. and Ward, J.P. (2000) Pattern Cutting and Making Up Volume 2, Revised Edition, LCFS Fashion Media

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DISCIPLINE SPECIFIC ELECTIVE COURSE
TECHNICAL TEXTILES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Technical Textiles	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To develop an understanding of the concepts, scope, and functional requirements of technical textiles.
- To critically examine the application of technical textiles across diverse sectors such as construction, healthcare, transport, geotechnical engineering, and industry.

Learning Outcomes

Students will be able to:

- Understand the properties and performance of a range of technical textiles.
- Analyse appropriate uses for a variety of fabrics, yarns and fibres in various areas like construction, healthcare, transport etc.
- Generate and develop creative ideas for the use of technical textiles.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction to Technical Textiles **5 Hour**

This unit covers the fundamentals of technical textiles, including their importance, scope and classification.

- Overview of technical textiles
- Importance and scope
- Classification of technical textiles

UNIT II: Technical Fibers, Yarns, fabrics and composites **16 Hour**

This unit highlights the types, properties and structural forms of technical fibers, yarns and fabrics, along with fundamentals of textile composites and their manufacturing processes.

- Technical fibers: Synthetic, Regenerated and Natural.

- Technical yarns: Filament, Spun and Composite
- Technical fabrics: woven, knitted, nonwoven, braided, laminated, coated, multilayer and 3D structures for technical applications.
- Textile composites: reinforcement textiles, matrix materials, composite manufacturing processes.

UNIT III: Application Area **16 Hour**

This unit provides an overview of major technical textile sectors, emphasizing functional requirements and end-use applications.

- Agrotech
- Buildtech
- Clothtech
- Meditech
- Oekotech
- Protech
- Indutech
- Packtech
- Hometech
- Geotech
- Sporttech
- Mobiltech
- Military textiles

Unit IV: New Developments in Technical Textiles **8 Hour**

Explores recent innovations and their applications.

- Smart textiles
- Shape-memory, phase change material (PCM)
- Energy harvesting textiles
- Wearable sensors and actuators
- E-textiles and conductive materials

TUTORIAL

(Credits 1; Hours 15)

1. Fabric sourcing of various technical textile fabrics

Activity: Market/industry visits to source samples of technical textiles. Students will compare sourced fabrics based on construction, performance, cost, and prepare a brief analytical report.

2. Study of geometrical parameters of industrial textile fabrics

Discussion: Understanding yarn density, fabric thickness, porosity, cover factor, and other geometrical parameters related to technical performance in technical textiles. Activity: Laboratory evaluation of geometrical parameters for selected technical textile fabrics. Students will measure and interpret results to relate structure with performance.

3. Field visit on technical textile materials

Activity: Field/industry visits to technical textile manufacturing or trading units to observe materials, technologies, and applications. Students will prepare a detailed visit report.

4. Project work on any one Area of technical textiles

Discussion: Selection of a focused topic in technical textiles material, process, product innovation, testing or application area to develop analytical and research skills. Activity: Independent project work involving literature survey, data collection, experimentation (if applicable), and report writing. Students will present findings at the end of the semester.

Essential Readings

UNIT I

This unit introduces the fundamental concepts of technical textiles, emphasizing textiles developed primarily for functional and performance-based applications rather than decorative use. It provides an overview of technical textiles, their evolution, and distinguishing characteristics, followed by a discussion on their importance and expanding scope in various sectors such as healthcare, agriculture, construction, transportation, defense, and environmental protection. The unit also explains the classification of technical textiles based on end-use applications, enabling students to develop a clear conceptual understanding of the field and laying a strong foundation for advanced study in technical fibers, yarns, fabrics, and related technologies.

- Horrocks, A. R., & Anand, S. C. (Eds.). (2000). *Handbook of technical textiles (chapter 1)*. Elsevier.
- Horrocks, A. R. and Anand, S. C. (2015) Handbook of Technical Textiles, second edition, volume 1: technical textile processes, The Textile Institute, Woodhead Publishing.

UNIT II

This unit focuses on the types, properties, and structural forms of materials used in technical textiles, beginning with an in-depth study of technical fibers including synthetic, regenerated, and natural fibers and their performance characteristics. It covers technical yarns such as filament, spun, and composite yarns, followed by technical fabrics produced through weaving, knitting, nonwoven, braided, laminated, coated, multilayer, and three-dimensional structures for specialized applications. The unit also introduces textile composites, emphasizing reinforcement textiles, matrix materials, and fundamental composite manufacturing processes, enabling students to understand the material–structure–property relationship in technical textile products.

- Bunsell, A. R. (2009) Handbook of Tensile Properties of Textile and Technical Fibres, 1st Edition, Woodhead Publishing Series in Textiles.
- Horrocks, A. R., & Anand, S. C. (Eds.). (2000). *Handbook of technical textiles.* Elsevier.

UNIT III

This unit provides a comprehensive overview of the major application sectors of technical textiles, ranging from Agrotech to Military textiles, with emphasis on functional requirements, performance parameters, and end-use applications. It covers diverse areas such as agriculture, construction, medical, environmental protection, personal and industrial safety, packaging, home furnishings, geotechnical engineering, sports, transportation, and defense. Through this unit, students gain insight into how technical textiles are designed and selected based on specific end-use needs and regulatory requirements across different industrial sectors.

- Anand, S.C., Kennedy, J F., Miraftab, M., and Rajendran, S. (2005)Medical Textiles and Biomaterials for Healthcare, Woodhead Publishing Series in Textiles.
- Bartels, V. (2011) Handbook of Medical Textiles, 1st Edition, Woodhead Publishing Series in Textiles.
- Horrocks, A. R., & Anand, S. C. (Eds.). (2000). *Handbook of technical textiles. (chaps 13-18)* Elsevier.
- https://gphisar.ac.in/wp-content/uploads/2022/09/Technical-Textiles-5th-Sem-TT-Study-M.pdf
- https://www.scribd.com/document/696654830/Technical-Textile

UNIT IV

This unit explores recent advancements and emerging technologies in the field of technical textiles, focusing on innovative materials and smart systems. It introduces smart textiles, shape-memory materials, phase change materials (PCM), energy-harvesting textiles, wearable sensors and actuators, and e-textiles with conductive materials. The unit highlights the role of interdisciplinary research and innovation in enhancing functionality, comfort, monitoring, and sustainability, preparing students to understand future trends and research opportunities in technical textiles.

- Tasaltin, N., Nnamchi, P. S., & Saud, S. (Eds.). (2020). *Advanced Functional Materials (chapter 14)*. BoD–Books on Demand.
- Sharma, S., Shukla, S. K., Singh, A., Govender, K. K., & Govender, P. P. (2025). E-Textiles in Biomedicine: Real Time Sensing, Energy Storage, and Therapeutic Applications. *Advanced Materials Interfaces*, e00672. https://doi.org/10.1002/admi.202500672
- Pandey, A., Tiwari, K. P., & Misra, R. Smart Materials for Next-Generation Electronics and Energy Storage.
- Younes, B. (2023). Smart E-textiles: A review of their aspects and applications. *Journal of Industrial Textiles*, *53*, 15280837231215493.https://doi.org/10.1177/1528083723121549

- De Rossi, D., Carpi, F., & Galantini, F. (2009). Functional materials for wearable sensing, actuating and energy harvesting. *Advances in Science and Technology*, *57*, 247-256. https://doi.org/10.4028/www.scientific.net/AST.57.247
- Bunsell, A. R. (2009) Handbook of Tensile Properties of Textile and Technical Fibres, 1st Edition, Woodhead Publishing Series in Textiles.
- Chapman, R. (2012) Smart Textiles for Protection, Woodhead Publishing Series in Textiles.

Suggested Readings

- Horrocks, A. R. and Anand, S. C. (2015) Handbook of Technical Textiles, second edition, volume 1: technical textile processes, The Textile Institute, Woodhead Publishing.
- Horrocks, A. R. and Anand, S. C. (2016) Handbook of Technical Textiles, second edition, volume 2: technical textile applications, The Textile Institute, Woodhead Publishing.
- Langenhove, L.V. (2007) Smart Textiles for Medicine and Healthcare: Materials, Systems and Applications, Woodhead Publishing Series in Textiles, 1st Edition.
- Tao, X. (2001) Smart Fibres, Fabrics and Clothing: Fundamentals and Applications, Woodhead Publishing Series in Textiles.

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DISCIPLINE SPECIFIC ELECTIVE COURSE
PSYCHOLOGY OF FASHION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Psychology of Fashion	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- Understand foundational psychological theories related to dress and appearance.
- Analyse how clothing influences cognition, emotions, and social interactions.
- Evaluate psychological drivers of fashion consumption.
- Examine ethical and digital fashion behaviour through psychological frameworks.
- Apply psychological insights to fashion design, branding, merchandising, and consumer experience.

Learning Outcomes

The students would be able to:

- Explain major psychological theories related to dress and appearance.
- Analyse how identity, personality, culture, and society shape fashion choices.
- Evaluate consumer motivations behind buying, adopting, and rejecting fashion.
- Apply psychological principles to fashion marketing, branding, and sustainability.
- Interpret clothing as a tool for personal expression, communication, and behaviour change.

THEORY

(Credits 3; Hours 45)

UNIT I: Foundation of Fashion Psychology **13 Hours**

This unit will introduce the various functions clothes serve. The unit will focus on various psychological theories that play an important part in clothing choices

- Functions of clothing and fashion
  - Material functions (Protection, modesty and concealment, immodesty and attraction)

  - Cultural functions (Communication, individualistic expression, social worth or status, definition of social role, economic worth or status, political symbol, religious and social ritual, recreation etc.)
- Core Psychological Theories
  - Self-concept and identity
  - Social comparison theory
  - Goffman's impression management
  - Clothing and body image
  - Appearance management and self-esteem

UNIT II: Consumer Psychology and fashion adoption **10 Hours**

This unit introduces key factors that govern consumers towards fashion adoption. The unit also highlights how the knowledge of consumer psychology is used for marketing of clothes.

- Motivation, perception, learning & attitudes in fashion consumption
- Fashion adoption & diffusion of innovations
- Hedonic vs utilitarian consumption
- Advertising psychology: persuasion, imagery, symbolism
- Digital fashion psychology (social media, influencers)
- Luxury consumption psychology
- Impulse buying & compulsive buying

UNIT III: Applied Fashion Psychology **12 Hours**

This unit focuses on analyzing consumer behavior within social and cultural psychological frameworks.

- Fashion therapy & clothing for mental well-being
- Psychological barriers to sustainable fashion
- Cognitive dissonance & ethical decision-making
- Behaviour change models (TPB, nudging, habits)
- Anti-fashion, minimalism, slow fashion
- Fashion for special needs populations (e.g., inclusive design)

UNIT IV: Virtual Dressing and Digital Fashion Psychology **10 Hours**

This unit examine digital fashion behaviour through psychological frameworks. Dress and body through virtual view and virtual fit.

- Dress and perception of virtual 3D self-images: comfort with body scanning
- Imaginary self in virtual world
- Virtual try-on influencing purchase decisions.
- AI-driven styling and psychological profiling.

TUTORIAL
(Credits 1; 15 Hours)

1. Class Discussion: "Why do people dress the way they do?" (Using real examples from campus/industry)
2. Mini Case Analysis:
   a. Analyse clothing choices of a public figure using theory of symbolic interactionism.
   b. Analyse why luxury consumers pay the "premium" using psychological theories.
3. Activity – Clothing Diary: Students document their outfits for 5 days and note psychological motives each day.
4. Short Reflection: Write 300 words on how a specific clothing item affects your confidence (enclothed cognition).
5. Group Presentation: Present "Functions of Clothing in Different Cultures."
6. Brand Psychology Audit: Analyse a fashion brand's personality and emotional appeal.
7. Sustainability Dissonance Task: Reflect on a time one bought something unsustainable—identify psychological conflict.
8. Slow Fashion Diary: Track clothing usage for 10 days to study personal consumption.
9. Virtual Fashion Avatar Activity: Students design digital avatars and analyse psychological choices behind features.
10. Students experience two contrasting avatar appearances (professional vs. casual, bold vs. minimal). They write a short reflection on how their behaviour or confidence changed.
11. AI Stylist Activity: Students test an AI-based styling tool and evaluate how personalization influences feelings of identity validation or enhancement.

Essential Readings

UNIT I

This unit introduces psychological, social, and cultural functions of clothing, focusing on identity, self-concept, body image, and impression management.

- Kaiser, S. B. (2012). Fashion and cultural studies (2nd ed.). Bloomsbury Academic.
- Barnard, M. (2014). Fashion theory: An introduction (2nd ed.). Routledge.
- Banerjee, S. (2018). Psychology of fashion. PHI Learning, India.
- Mukherjee, A. (2020). Clothing, identity and social meaning in India. Indian Journal of Social Psychology, 31(2), 145–158.

UNIT II

This unit focuses on consumer motivation, perception, fashion adoption, diffusion of trends, advertising psychology, digital influence, and luxury consumption.

- Solomon, M. R. (2018). Consumer behaviour: Buying, having, and being (12th ed.). Pearson Education.
- Rogers, E. M. (2003). Diffusion of innovations (5th ed.). Free Press.

- Easey, M. (2009). Fashion marketing (3rd ed.). Wiley-Blackwell.
- Schiffman, L. G., & Wisenblit, J. (2019). Consumer behaviour (12th ed.). Pearson.
- Batra, R., & Kazmi, S. H. H. (2019). Consumer behaviour (3rd ed.). Excel Books, New Delhi.
- Jain, S., & Pant, S. (2021). Digital fashion consumption among Indian youth. Journal of Fashion Marketing and Management, 25(3), 465–480.

UNIT III

This unit applies psychological theories to fashion for mental well-being, sustainability, ethical decision-making, behaviour change, and inclusive design.

- Fletcher, K. (2014). Sustainable fashion and textiles: Design journeys (2nd ed.). Routledge.
- Gwilt, A. (2020). A practical guide to sustainable fashion. Bloomsbury Visual Arts.
- Joy, A., Sherry, J. F., Venkatesh, A., Wang, J., & Chan, R. (2012). Fashion Theory, 16(3), 273–295.
- Desai, R., & Shukla, P. (2019). Fashion and sustainability in India. Bloomsbury India.
- Narang, R. (2020). Sustainable fashion behaviour in India. Journal of Textile and Apparel Studies, 4(1), 22–30.
- Kawamura, Y. (2016). Doing research in fashion and dress. Bloomsbury Academic.

UNIT IV

This unit explores psychological responses to virtual fashion, digital self-image, virtual try-on, AI-driven styling, and technology-mediated fashion behaviour.

- Kim, J., & Forsythe, S. (2008). Adoption of virtual try-on technology. Journal of Interactive Marketing, 22(2), 45–59.
- Choi, T. M. (2020). Artificial intelligence and big data analytics for fashion industry. Springer.
- Pine, B. J., & Gilmore, J. H. (2011). The experience economy. Harvard Business Review Press.
- McKinsey & Company. (2022). The state of fashion: Technology and digital transformation.
- Narkhede, B. E., & Bhattacharya, S. (2021). Digital fashion retail transformation in India. International Journal of Fashion Design, Technology and Education, 14(3), 385–395.

Suggested Readings

- Almond, K. (2017). *Basics Fashion Design: Draping*. Bloomsbury Publishing.
- Kim, J. H., & Lennon, S. (2013). “Emotional and Cognitive Reactions in Online Shopping.” *Psychology & Marketing*.
- McCracken, G. (1986). "Culture and Consumption." *Journal of Consumer Research*.

- Vigneron, F., & Johnson, L. (2004). “Luxury Brand Consumption Behavior.” *Journal of Brand Management*.

Note: Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE COURSE

HISTORY OF FASHION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
History of Fashion	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To study the development of costume from ancient times to the 20th century, considering socio-cultural and technological changes.
- To create awareness and understanding of the styles and special features in costume through the ages.

Learning Outcomes

The students would be able to:

- Trace the evolution of western costume.
- Identify different styles and special features in costume through the ages.
- Draw inspiration from the long-established styles for designing.

THEORY
(Credits 3; Hours 45)

UNIT I: Importance of World Textiles and Costumes in Historical Perspective. 6 Hours

This unit outlines the historical perspective of the origin of textiles and costumes.

- Sources of information for historic costumes
  - Archaeological excavations and discoveries
  - Ancient literature, chronicles and archival records
  - Museums and art galleries
  - Sculpture and pottery
- The origin of costume
- Costume through the ages- inspiration for designing and styling

UNIT II: Costumes in Early Civilizations **10 Hours**

This unit focuses on the origin and evolution of Costumes in ancient civilizations (300BC-300 AD)

- Mesopotamia
- Egypt
- Greece
- Rome
- India

UNIT III: Costumes in the Middle Ages **13 Hours**

This unit aims to explore the advancements in textiles and costumes during the Middle Ages.

- The Feudal ages (1100 AD- 1300AD)
- The late Middle Ages (1300AD-1500AD)
- Renaissance: Italy, France, England (15^{th}-16^{th} century)
- India: Mughal period

UNIT IV: Costumes in 17^{th} to 20^{th} century **16 Hours**

This unit highlights the changes and developments in European costumes through different eras from 17^{th} to 20^{th} century reflecting social milieu and technological advancements.

- Baroque and Rococo periods – France and England
- French Revolution and thereafter (1790AD-1900AD)
- The Directoire and Empire period (1790AD-1820AD)
- The Romantic period (1820A.D-1850AD)
- The Crinoline period (1850 AD-1869AD)
- The Bustle period (1870 AD- 1900 AD)
- Early Twentieth Century

TUTORIAL

(Credit 1; Hours 15)

- To make a report or presentation on any two design collections of eminent designers inspired by historic costumes.
- To showcase costumes styles of the ancient civilizations through draping technique.
- To discuss and design garments and accessoies inspired from any one ancient civilization
- To make a presentation on any one prominent component of a period costume with reference to raw material, construction, embellishments/styling, use etc.
- Case study of a historical figure (E.g. Cleopatra, Queen Elizabeth I, Emperor Akbar,

Napoleon, Louis XIV etc.) for analyzing their costumes with reference to textile materials and colours used, styling of garments, silhouette, accessories etc.

- To make a Presentation on highlighting development in textiles and costumes during 17th to early 20th century with respect to the influence of socio-cultural, technological factors on styling of costumes.

Essential Readings

UNIT I

This unit highlights the historical perspective of the origin of textiles and costumes. It covers the study of various sources of information on the history of costumes and fashion. It further elaborates on the evolution of costume styles through the ages.

- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 1)
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 1)
- Cole, D. J., & Deihl, N. (2015). The history of modern fashion: From 1850. Laurence King Publishing.

UNIT II

This unit covers the details of costumes prevalent in the ancient civilisations, from 300 BCE to 300 AD. The costumes and fashion prevalent in the Mesopotamian, Egyptian, Greek, Roamn and Indian Civilisations are discussed in details.

- Alkazi, R. (1983) Ancient Indian Costume, Art Heritage Books.
- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 2 - 6)
- Singh, M. (2017). Traditional Indian costumes and textiles. National Institute of Fashion Technology (Chapter 1-5)
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 2 & 3)

UNIT III

This unit elaborates on the developments in fashion during the Middle Ages across the feudal ages, late Middle Ages, Renaissance period and the Mughal period.

- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 7 - 12)
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 4 - 6)
- Singh, M. (2017). Traditional Indian costumes and textiles. National Institute of Fashion

Technology (Chapter 9)
- Kumar, R. (2010). Costumes and textiles of royal India. Christie's Books.

UNIT IV

This unit highlights the changes and developments in European fashion through different eras from 17th to 20th century discussing with reference to social milieu and technological advancements.

- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 13- 21)
- Cole, D. J., & Deihl, N. (2015). The history of modern fashion: From 1850. Laurence King Publishing.
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 7 - 12)

Suggested Readings

- Breward, C., Lemire, B., & Riello, G. (Eds.). (2023). The Cambridge Global History of Fashion, Volume 1: From antiquity to the 1800s. Cambridge University Press.
- Cumming, V. (2004) Understanding Fashion History, London: Batsford.
- Evans, C., & Nguyen, E. (Eds.). (2023). Fashion history: A global view (2nd ed.). Bloomsbury.
- Lester, K.M. (1956) Historic Costume, llinois: Chas A Bennett Co. Inc.
- Peacock, J. (2007) The Chronicle of Western Costume, Thames and Hudson.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE COURSE
TEXTILE HERITAGE OF INDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Textile Heritage of India	4	3	0	1	As per admission criteria	

Learning Objectives

- To create awareness and foster appreciation of the country's rich handcrafted textiles.
- To acquaint students about the handloom sarees, shawls, carpets and floor coverings of various regions.
- To impart knowledge about the various embroidered and painted textiles.

Learning Outcomes

Students will be able to:

- Recognise and identify embroidered fabrics of different states in terms of stitches, colours, motifs and their significance.
- Explain material and design of selected handloom fabrics.
- Describe the historical perspective, production and techniques of various shawls, carpets and floor coverings.
- Discuss the significance of certification and GI tag for traditional textile crafts.

THEORY
(Credits 3; Hours 45)

UNIT I: Handloom Sarees **12 Hours**

This unit will highlight the importance of certification and GI tag for traditional textiles. The unit will focus upon handloom sarees from diverse regions with respect to history, production centre, techniques, designs and colours.

- Kota doria (Rajasthan), Paithani (Maharashtra), Chanderi and Maheshwari (Madhya Pradesh), Gadwal (Telangana), Kasavu (Kerala), Bomkai (Odisha), Pochampally (Andhra Pradesh)

UNIT II: Shawls **7 Hours**

This unit will provide an overview of diverse materials, techniques, and design features of shawls produced across different regions.

- Kinnauri and Kullu (Himachal Pradesh), Kanikar and Amlikar (Kashmir), Northeast Shawls.

UNIT III: Carpets and Floor Coverings **8 Hours**

This unit highlights the variety of carpets and the distinctive production techniques, designs, and colours associated with each of the following floor coverings.

- Hand-Knotted carpets
- Bhutia carpets
- Namda and Gabba, Kashmir
- Durries : Panja durri of Punjab and Haryana, Chindi durri

UNIT IV: Embroidered and Painted Textiles **18 Hours**

This unit explores the materials, techniques, motifs, and colour traditions found in India's embroidered and painted textiles.

- Embroideries: Chamba Rumal (Himachal Pradesh), Zardozi (Uttar Pradesh), Suf (Gujarat), Toda (Tamil Nadu), Manipur, Banjara (Telangana), Applique work: Pipli (Odisha) and Gotta Patti (Rajasthan).
- Painted textiles: Pichwai painting of Nathdwara and Phad painting (Rajasthan), Thankga painting (Ladakh), Mata ni Pachedi of Gujarat.

PRACTICAL

(Credit 1; Hours 30)

1. Create samples of traditional embroideries.
2. Develop a design catalogue on traditional textile crafts.
3. Create a sample of tapestry weave used in shawl making
4. Prepare an interview schedule for the study of chosen textile craft and craftsmen and administer the prepared interview schedule on selected artisan samples
5. Documentation of a selected textile craft
6. Create products inspired from traditional textiles.

Essential Readings

UNIT I

This unit explores handloom sarees from across India, highlighting their history, production, techniques, and designs. From Kota Doria to Paithani, Chanderi, and more, each saree showcases unique traditions and craftsmanship. It will also uncover the importance of certification and GI tags in promoting and protecting these textiles, celebrating the artisans who weave culture, history, and beauty.

- Barnard, N., Gillow, J., 1993, Indian Textiles, Thames and Hudson, USA
- Chattopadhaya, K.D., 1995, Handicrafts of India, Wiley Eastern Limited, N Delhi
- Crill, R., 2015, The Fabric of India, Victorial and Albert Museum, UK
- Chishti R. K., Kelkar R. & Singh M. (2010). Saris of India : tradition and beyond. New Delhi: Lustre Press, Roli Books.
- Singh M. & Chishti R. K.,(1995). Saris of India : Bihar and West Bengal. New Delhi: Amr Vastr Kosh & Wiley Eastern Ltd Pune
- Das, Shukla, 1992, Fabric Art- Heritage of India, Abhinav Publications, N Delhi.
- GI Tags and certification- https://handicrafts.nic.in/CmsUpload/12222017102212GI%20BOOK%20FINAL%202-5-17_resized.pdf
- GI tagged Indian textiles-https://www.usthadian.com/gi-tagged-indian-textiles-driving-heritage-and-artisan-growth/

UNIT II

Indian shawls showcase rich cultural diversity and artisanal expertise. This unit explores shawls from across India - Himachal Pradesh (Kinnauri, Kullu), Kashmir (Kanikar, Amlikar), and Northeast India, highlighting unique materials, techniques, and designs that reflect tradition and regional identity.

- Irwin, J, 1954, Shawls - A study in Indo European Influences, London
- Jaitley,J, ed 1990, Crafts of Jammu, Kashmir and Ladakh, Mapin Publishing, Ahmedabad
- Rizvi, J., & Ahmed, M. (2017). Pashmina: The Kashmir shawl and beyond (Second revised edition). Marg Foundation.
- Roy, S. K. (2007). Textile traditions of Northeast India. Agam Kala Prakashan.
- Jaitly, J. (2012). Crafts atlas of India (2012 ed., 464 pp.). Niyogi Books. (ISBN: 978-8189738372)
- Sharma, N et al 2008, Traditional handicrafts and handlooms of Kullu district, HP., Indian Journal of Traditional Knowledge, Vol 7 (1), Jan pp56-61
- Ames, Frank 1986, The Kashmir Shawl, Antique Collections, Woodbridge
- Kullu shawls - https://www.researchgate.net/profile/Anju-Kapoor-3/publication/363921343_Traditional_Handicrafts_and_Handloom_of_Kullu_district_Hi

machal_Pradesh/links/6447e4c7d749e4340e383238/Traditional-Handicrafts-and-Handloom-of-Kullu-district-Himachal-Pradesh.pdf?origin=scientificContributions

- Kanikar Shawls - https://www.researchgate.net/profile/Veenus-Jain/publication/332801594_Kani_Shawl_A_Case_Study_of_a_Milestone_in_the_Art_of_Weaving/links/5ccbc2bb92851c3c2f818f79/Kani-Shawl-A-Case-Study-of-a-Milestone-in-the-Art-of-Weaving.pdf?origin=publication_detail&_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uRG93bmxvYWQiLCJwcmV2aW91c1BhZ2UiOiJwdWJsaWNhdGlvbiJ9fQ

UNIT III

Indian carpets and floor coverings are renowned for their beauty and diversity, reflecting the country's rich textile heritage. This unit explores the distinctive world of hand-knotted carpets, Bhutia carpets, Namda and Gabba from Kashmir, and Durries like Panja durri from Punjab and Haryana, and Chindi durri, highlighting their unique production techniques, designs, and colours that showcase regional craftsmanship and tradition.

- Mathur, A. (2004). Indian carpets: A hand-knotted heritage (Hardcover ed., 96 pp.). Rupa Publication Pvt. Ltd. (ISBN: 8129103095)
- Pande, P. (2024). Floor coverings from Kashmir: Kaleen carpets, namdah, gabba, ari rugs and wagoo mats (1st ed., 236 pp.). Niyogi Books.
- Chattopadhyay K. D. 2018, Indian Carpets and Floor Coverings, All India Handicrafts Board Digitised version https://archive.org/details/indiancarpetsflo00chat
- Namda - https://gaatha.org/Craft-of-India/namda-craft-detail-research/
- Namda Art of Kashmir- https://oaklores.com/2024/12/06/namda-art-of-kashmir-reviving-the-heritage-of-handcrafted-rugs/
- Gabba making - https://poonchwoolenandhandicraftservices.wordpress.com/best-woolen-services-in-poonch/gabba-making-in-valley-of-poonch/
- Panja Durries - https://www.ijcmas.com/8-2-2019/Saroj%20Yadav%20and%20Neelam%20M.%20Rose.pdf
- Patterns and symbols of Panda Durries https://oaklores.com/2024/12/16/traditional-patterns-and-symbols-in-punjabi-durries/

UNIT IV

India's embroidered and painted textiles showcase rich artistic heritage. This unit explores embroideries (Chamba Rumal, Zardozi, Suf, etc.), appliqué work (Pipli, Gotta Patti), and painted textiles (Pichwai, Phad, Thankga, Mata ni Pachedi), highlighting unique techniques, motifs, and colours that make each textile a masterpiece.

- Jhulka, Anu 2019, Nathdwara Pichwais: The paintings of Lord Krishna, Blue Rose Publisher

- Mohanty, B.N, 1980, Applique craft of Orissa, Alfred Buhler ed, Calico museum of textiles (Digitised 2009)
- Thankha Paintings - The Process of Thangka Painting https://artsandculture.google.com/story/the-process-of-thangka-painting-dastkari-haat-samiti/-QWh8YagYf4tIQ
- Karolia, Anjali, 2019, Traditional Indian Handcrafted Textiles, Niyogi Publishers
- How Mata ni Pachedi is Created https://artsandculture.google.com/story/how-mata-ni-pachedi-is-created-dastkari-haat-samiti/4wWx_aQVxaGXJQ
- Phad Paintings - https://www.artisera.com/blogs/expressions/phad-paintings-of-rajasthan
- Naik, Shailja 1996, Traditional Embroideries of India, APH Publishing

Suggested Readings

- Annual Report, (2002-2003), Handloom Industry, Ministry of textiles, Chapter 5, pg 1-20
- Chelna Desai, 1988, Ikats Textiles of india, Chronicle Books, India
- Ghosh, G.K 2000, Ikat Textiles of India New Apron, New Delhi
- Handa, O.C. (1998). Textiles, Costumes and Ornaments of the Western Himalayan. Indus Publishing.
- Jayakar, Pupul 1979, Homage to Kalamkari, Marg Publishing, Bombay
- Mausumi Kar, (2015), The Indian Textile and Clothing Industry An Economic Analysis, Springer New Delhi Heidelberg New York Dordrecht London, Chapter 1& 2, pg 12-33.
- Pandit Savitri, 1951, Indian Embroidery- Its Variegated Charm, Pandit Publisher, Baroda Embroidery tutorials, video links of woven textiles and slide share
- Carpet weaving Traditions - https://www.granthaalayahpublication.org/journals/granthaalayah/article/download/IJRG19_ARTS11_08/794/4631
- Craft Documentaries on YouTube

Note: Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi, from time to time.

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DISCIPLINE SPECIFIC ELECTIVE COURSE
ADVANCED TEXTILE COLOURATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Textile Colouration	4	2	0	2	As per admission criteria	Introductory Course in Dyeing and Printing

Learning Objectives

- To gain knowledge about the new developments in dyeing and printing
- To understand the environmental issues related with dyeing and printing
- To understand the concept of colour and its measurement

Learning Outcomes

The students would be able to:

- Identify and describe different dyeing machines.
- Describe the innovative methods of printing
- Explain certifications and standards related to dyeing and printing of textiles.
- Objectively measure and analyse the colour of dyed and printed textiles

THEORY
(Credits 2; Hours 30)

UNIT I: Dyeing **12 Hours**

This unit lays thrust on the dyeing machines used at different stages of dyeing and latest developments in dyes and dyeing technology.

- Dyeing machines
- Mass colouration
- Dyeing of blends
- New developments in dyes: Thermochromic dyes, Photochromic dyes, Bio dyes, etc.

UNIT II: Printing **08 Hours**

This unit highlights various new methods and styles of printing.

- New developments in printing- Digital printing, Ink-jet printing, Flock printing, Foil printing, 3-D printing, etc.
- Printing with Natural dyes: Traditional styles and new developments

UNIT III: Ecological Concerns in Dyeing and Printing **05 Hours**

This unit highlights the impact of dyeing and printing on the environment and various eco-friendly products and processes.

- Environmental impacts of dyeing and printing
- Eco-friendly processes and products: Low water and low energy intensive dyeing methods (Ultrasonic dyeing, Foam dyeing, Supercritical CO_2 dyeing, etc.)
- Certifications and standards in dyeing and printing

UNIT IV: Colour Measurement **05 Hours**

This unit deals with the dimensions of colours and its measurement.

- Colour theory: hue, value, intensity
- Principles of colour measurement: Optical density, K/S, CIE-L*c*h*, CIE-L*a*b*
- Metamerism

PRACTICAL
(Credits 2; Hours 60)

- Dyeing of different substrates with natural dyes
- Printing with natural dyes
- Dyeing and printing of blends
- Printing on silk and wool
- Discharge on reactive grounds
- Discharge printing on silk with acid ground
- Transfer Printing
- Colour measurement

Essential Readings

UNIT I

This unit explains the requirements of dyeing machine. It includes different types of machines used for dyeing at various stages of dyeing. It also deals with the concept of mass colouration and is importance. Dyeing of important blends will also be dealt with. In addition, new developments in dyeing will be explained.

- Aspland, J. R. (1997). *Textile dyeing and colouration*. AATCC.
- Chakraborty, J. N. (2014). *Fundamentals and practices in colouration of textiles* (2nd ed.). Woodhead Publishing India Pvt. Ltd.
- Rastogi, D., & Chopra, S. (Eds.). (2017). *Textile science*. Orient Black Swan Publishing Limited.
- Sekhri, S. (2022). *Textbook of fabric science: Fundamentals to finishing* (4th ed.). PHI Learning Pvt. Ltd.
- Trotman, E. R. (1984). *Dyeing and chemical technology of fibres* (6th ed.). Charles Griffin and Company Ltd.
- सेख़% सीमा (2022), aw ि◌ay7v, PHI Learning Pvt. Ltd. Delhi

UNIT II

This unit includes developments and advancements in textile printing such as digital printing, ink jet printing, 3D printing etc. This unit further discusses printing with natural dyes.

- Clarke, W. (1977). *An introduction to textile printing*. Butterworth and Co. Ltd.
- Kolanjikombil, M. (2023). *Printing of textile substrates: Machineries and methods* (Vol. 1). Woodhead Publishing.
- Mahapatra, N. N. (2022). *Textile printing*. Woodhead Publishing India.
- Miles, L. W. C. (1994). *Textile printing* (2nd ed.). Society of Dyers and Colorists.
- Shenai, V. A. (1979). *Technology of textile processing: Technology of printing* (2nd ed.). Sevak Publications.
- Shore, J. (Ed.). (1990). *Colorants and auxiliaries: Organic chemistry and application properties* (Vols. 1–2). Society of Dyers and Colorists.

UNIT III

In this unit students will be familiarised with the impact of various chemicals and methods used for dyeing and printing on the environment. Developments towards eco-friendly dyeing and printing will be dealt with.

- Bhatia, S. C., Mangla, P., & Devraj, S. **(2020).** *Energy conservation in textile industry*. Woodhead Publishing India.
- Mahapatra, N. N. **(2015).** *Textiles and environment*. Woodhead Publishing India Pvt. Ltd.

UNIT IV

Fundamental concepts of colour and its measurement will be explained. The students will learn the use of colour measurement in the Textile industry.

- Gulrajani, M. L. (Ed.). (2010). *Colour measurement: Principles, advances and industrial applications*. Woodhead Publishing.
- Shah, H. S., & Gandhi, R. S. (1990). *Instrumental colour measurement and computer*

aided colour matching for textiles. Mahajan Book Publication.

Suggested Readings

- Gulrajani, M. L. (2012). Colour specification and visual approval methods for textiles. In M. L. Gulrajani (Ed.), *Colour design: Theories and applications* (pp. 271–294). Woodhead Publishing.
- Kuehni, R. G. (1975). *Computer colorant formulation*. Lexington Books.
- Park, J. (1993). *Instrumental colour formulation: A practical guide*. Woodhead Publishing.
- Shah, H. S., & Gandhi, R. S. (1990). *Instrumental colour measurement and computer aided colour matching for textiles*. Mahajan Book Publication.
- Textile Institute / Elsevier. (2014). *Principles of colour and appearance measurement*. Woodhead Publishing Series in Textiles.
- Sule, A. D. (2002). *Computer colour analysis*. New Age International Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi, from time to time

ADVANCED RESEARCH METHODOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre- requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Research Methodology	2	2	0	0	As per admission criteria	Should have studied Basic Research Methodology and Statistics

Learning Objectives

- Construct a theoretical framework for diverse research problems.
- Compare and contrast the design elements of experimental, quasi-experimental, and non-experimental studies.
- Formulate appropriate research questions for a mixed-methods design.

Learning Outcomes

After completing the course, students will be able to:

- Design complex research projects, including mixed-methods and longitudinal studies, appropriate for advanced academic inquiry.
- Determine the internal and external validity of research designs.
- Evaluate and justify the selection of advanced sampling techniques.

THEORY
(Credits 2; Hours 30)

UNIT I: Theoretical Foundation of Research Design and Sampling. 12 Hours

This unit covers the theoretical foundation of research designs, issues of internal and external validity, advanced literature review techniques including systematic reviews and meta-analysis, and approaches to theory building through inductive, deductive, and abductive reasoning. The unit also discusses sophisticated sampling techniques, sample size determination, and sources of sampling error, enabling learners to design rigorous and generalizable research studies.

- Types of research designs and internal external validity perspectives
- Literature Review Approaches: Systematic Review, Meta Analysis, scoping review and others
- Theory Building and testing in qualitative and quantitative researches
- Sampling Frameworks and strategy, Sample size calculation and error
- Advanced Quantitative Sampling Techniques: Stratified Cluster Sampling, Multi-Stage Sampling, Adaptive Sampling and other techniques.
- Sampling in qualitative research: Techniques and issues of depth, context and data saturation

UNIT II: Quantitative, Qualitative and Mixed Methods Research Design. 18 Hours

This unit focuses on the different types of research designs including, advanced quantitative research designs, key qualitative research methodologies and mixed-methods research designs and strategies for integrating qualitative and quantitative data.

- Quantitative Research Design
  - Advanced Experimental Designs: RCT Designs, Factorial designs, Repeated Measures (within-subjects),
  - Longitudinal Studies: Panel, Cohort, and Trend designs
  - Cross-Sectional: Survey and other quantitative designs.
- Qualitative Methodologies
  - Aspects of robust Qualitative research designs.
  - Iteration, Data Triangulation,Saturation and Reflexivity in qualitative research
  - Ethnographic Research, Case Study Research, Narrative Inquiry
  - Action and Participatory Researches: philosophical and methological perspectives

- Mixed-Methods Design
  - Convergent Parallel, Explanatory Sequential, Exploratory Sequential designs; Notation systems (e.g., QUAL to QUAN)
  - Integration and Mixing: Strategies for data mixing, synthesis, and developing a unified interpretation.

Essential Readings

UNIT I

This unit introduces the perspectives that guide advanced research practices. Students will study different types of research designs, key issues of validity, advanced literature review methods, and approaches to theory development. The unit also covers details of sampling for research. The unit aims to strengthen students' conceptual clarity and ability to link theory, methodology, and research questions in scholarly inquiry.

- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research*. John

Wiley & Sons
- Burns, Robert, B. (2000) *Introduction to Research Methods*(4th ed.,chaps8-10, 20-22, 29,30). Sage Publications
- Kothari, C.R., Garg, Gaurav (2023) *Research Methodology: Methods and Techniques*
- (5th ed.) New Age International Publishers
- Mandlik, D., Kalkar, P., Singh C. (2025) *Advanced Research Methodologies and Practices*. Taylor & Francis.
- Mallik, R., Kurian, M., Prajapati, V., Pithadia, M. (2023) *Advanced Research Methodology*. AG Publishing House
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chaps3-5) Pearson Education

UNIT II

This unit focuses on advanced quantitative research designs including experimental, longitudinal, and cross-sectional designs. Emphasis is placed on understanding complex experimental structures and multivariate approaches. Through this unit, students will also develop an understanding of advanced qualitative research approaches such as ethnographic, case study, narrative, and participatory research designs, focusing on their key features and applications. The unit will further discuss mixed-methods research designs that integrate quantitative and qualitative approaches. Students will examine different mixed-methods designs and strategies for integrating data during analysis and interpretation.

- Baumeister, M., Kropf, S., & Pöpper, C. (2022). Quantile-based MANOVA: A new tool for inferring multivariate data in factorial designs. *arXiv preprint arXiv:2211.15484*. https://doi.org/10.48550/arXiv.2211.15484
- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research*. John Wiley & Sons
- Burns, Robert, B. (2000) *Introduction to Research Methods*(4th ed.,chaps8-10, 20-22, 29,30). Sage Publications
- Caruana, E. J., Roman, M., Hernández-Sánchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of Thoracic Disease*, *7*(11), E537–E540. https://doi.org/10.3978/j.issn.2072-1439.2015.10.63
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications, Inc.
- Denzin, N. K., Lincoln, Y. S., Giardina, M. D., & Cannella, G. S. (Eds.). (2024). *The SAGE handbook of qualitative research* (6th ed.). SAGE Publications
- Kerlinger, F. N. (1973). *Foundations of Behavioral research* (2nd ed., chaps 7,8, 17- 26). Holt, Rinehart, and Winston.
- Kothari, C.R., Garg, Gaurav (2023) *Research Methodology: Methods and Techniques* (5th ed.) New Age International Publishers
- Luthfiandana, R., Santioso, L. L., Febrian, W. D., Soehaditama, J. P., & Sani, I. (2024). Qualitative research concepts: Phenomenology, grounded theory,

ethnography, case study, narrative. *Scientia Journal of Applied Management*, *2*(1), 26–36. https://doi.org/10.38035/sjam

- Minc, S. D., Chandanabhumma, P. P., Sedney, C. L., Haggerty, T. S., Davidov, D. M., & Pollini, R. A. (2022). Mixed methods research: A primer for the vascular surgeon. *Seminars in Vascular Surgery*, *35*(4), 447–455. https://doi.org/10.1053/j.semvascsurg.2022.09.003
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chap 13) Pearson Education
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, *42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528- y

Suggested Readings

- Dagher, D., & Khan, M. (2025). Writing a systematic review and meta-analysis: A step-by-step guide. *Sports Health*, *17*(5), 885–890. https://doi.org/10.1177/19417381251364686
- M. E. R. (2020). Methodological integrity in critical qualitative research. *The Counseling Psychologist*, *48*(6), 848–874. https://doi.org/10.1177/0011000020950348
- Findley, M. G., & Faten, A. (2024). Vulnerability in research ethics: A call for assessing vulnerability and implementing protections. *Proceedings of the National Academy of Sciences*, *121*(11), https://doi.org/10.1073/pnas.2322821121

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TOOLS FOR RESEARCH

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Tools for Research	2	2	0	0	As per admission criteria	Nil

Learning Objectives

- Design and evaluate quantitative and qualitative tools.
- Understand data processing and effectively utilize common statistical packages.
- Apply coding techniques, and utilize digital platforms and AI in research design and analysis.

Learning Outcomes

After completing the course, students will be able to:

- Differentiate between major quantitative and qualitative tools.
- Demonstrate proficiency in data entry, coding and cleaning.
- Utilize digital platforms and AI effectively in the formulation, administration, and data collection.
- Proficiently utilize specialized software for qualitative data analysis and quantitative statistical testing.

THEORY
(Credits 2; Hours 30)

UNIT I: Quantitative Tools, Data Coding and Analysis — 15 Hours

This unit introduces quantitative research tools, including questionnaires and rating scales, and the principles of their development, reliability, and validity. It covers major rating scales and key steps in scale construction, analysis, and standardization, along with the use of digital platforms and AI for tool development and administration. This unit also focuses on quantitative data coding, entry, and cleaning using statistical software. It introduces variable definition, handling of missing data, basic automation through spreadsheet and open-source tools, and familiarization with commonly used statistical software for data management and analysis.

- Quantitative measurement, Variables and construct definition
- Quantitative tool development: Questionnaire, Semi-Structured Interview Schedules.
- Rating Scales Types and Development Process: Item Generation and Content Validation, Item Analysis, Internal Consistency and Factor Analysis, Scale Refinement and Standardization.
- Coding styles and Approaches.
- Assessment of Reliability and Validity of quantitative Tools.
- Data Coding, Entry and Cleaning (Statistical Software): Handling missing data (listwise/pairwise deletion).
- Automation and Data Scripting: Advance excel, other open-source software for data import/export.
- Statistical Software Usage: Navigating common statistical packages
- Leveraging Digital Tools and AI for enhancing the Research lifecycle: Tool Formulation, Data collection and Analysis

UNIT II: Qualitative Tools, Data Coding and Analysis **15 Hours**

This unit introduces major qualitative research tools and their application in research. It covers the development and validation of qualitative tools, descriptive and thematic coding techniques, and the use of digital platforms and AI for qualitative data collection and analysis. This unit further focuses on qualitative data coding and analysis using qualitative data analysis software. It introduces the interface and use of QDAS for importing, coding, cleaning, and managing text, audio, and video data, along with an overview of NVivo, ATLAS.ti, and other open-source tools.

- Qualitative tools: In-Depth Interview, Focus Group Discussion, Case Study, Observation, Diaries, Oral Narratives/Stories and others.
- Participatory tools : Types, characteristics and usage in qualitative and participatory researches.
- Developing Qualitative Tools: Tool selection and development, pilot testing and refinement.
- Validity of Qualitative Tools: Qualitative vs. Quantitative Validity, Methods for establishing validity for qualitative tools.
- Coding Techniques: Descriptive and thematic coding
- Digital Platforms and AI for development of qualitative tools and data analysis.
- Qualitative Data Analysis Software (QDAS) Interface: Importing, coding and cleaning different data types (text, audio, video)
- Overview of NVivo, ATLAS.ti and other open-source QDAS software

Essential Readings

UNIT I

This unit aims to build an understanding of quantitative tools used for the purpose of data

collection. The unit introduces various types of quantitative data tools, their development and assessment of their reliability and validity. This unit further introduces various rating scales and their development, validation and standardisation. The unit also includes the learning of coding and analysis of quantitative data, basics of data processing scripts and common statistical packages

- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Cheema, J. R. (2014). Using listwise deletion to cope with missing data: A cautionary note. *Journal of Educational and Developmental Psychology, 4*(1), 127–134.
- Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis. *International Journal of Endocrinology and Metabolism, 10*(2), 486–489.
- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Hausner, E. T., & Hirt, S. J. (2020). Improving reproducibility in academic data-intensive research through computational workflows. *Frontiers in Research Metrics and Analytics, 5*(7).
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).

UNIT II

This unit introduces various types of qualitative tools used in research, their development, pilot testing and refinement. The unit also introduces techniques of establishing validity and of such qualitative tools of data collection. This section also discusses prominent digital and AI tools for qualitative research and provides an overview of qualitative data coding and analysis software.

- Allsop, D. B., Chelladurai, J. M., Kimball, E. R., Marks, L. D., & Hendricks, J. J. (2022). Qualitative methods with NVivo software: A practical guide for analyzing qualitative data. Psych, 4(2), 142–159.
- Al-Kassimi, M., & Al-Sharqi, A. (2020). Data visualization techniques: Model and taxonomy. International Journal of Research in Engineering and Science, 8(3), 44–53.
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).
- Provalis Research. (n.d.). QDA Miner: Qualitative Data Analysis Software. Retrieved from https://provalisresearch.com/products/qualitative-data-analysis-software/
- Urban Institute. (2025). Urban Institute Data Visualization Style Guide. Retrieved from

http://urbaninstitute.github.io/graphics-styleguide/

- Weninger, M. (2024). Open coding in qualitative research: A systematic review and guide. *ResearchGate* (preprint).

Suggested Readings:

- Kang, H. (2013). The prevention and handling of the missing data. *Korean Journal of Anesthesiology, 64*(5), 402–406.
- Kery, M., & Myers, M. (2020). Improving reproducibility in academic data-intensive research through computational workflows. *Frontiers in Research Metrics and Analytics, 5*(7).
- Saravanakumar, A. P., & Shitharth, S. (2023). A survey on sentiment analysis: Techniques, algorithms, and application areas. *Journal of King Saud University – Computer and Information Sciences, 35*(3).
- Takes, F. W. (2024). Gephi tutorial for graph/network visualization. Retrieved from https://github.com/franktakes/gephi-tutorial

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TECHNIQUES OF RESEARCH WRITING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course
		Lecture	Tutorial	Practical		
Techniques of Research Writing	2	2	0	0	As per admission policy	Should have studied Advanced Research Methodology and Tools for Research

Learning Objectives

- Comprehend and apply principles of academic writing for research
- Understand the concept of plagiarism and adopt strategies to avoid plagiarism.
- Learn and use different citation styles and effectively utilize reference management tools.
- Outline the process of writing, publishing, and presenting research.
- Avoid common errors in academic writing.

Learning Outcomes

After completing the course, students will be able to:

- Structure and organize major scholarly works according to disciplinary standards.
- Master the principles of academic writing and non-plagiaristic expression.
- Employ visualization techniques to effectively communicate complex research findings and data patterns.
- Apply citation styles and formatting requirements meticulously to produce publication-ready manuscripts.

THEORY
(Credits 2; Hours 30)

UNIT I: The Foundations and Structure of a Research Manuscript — 18 Hours

This unit covers the essentials of clear, concise, and formal academic writing, ethical practices including plagiarism avoidance, effective idea organization, and responsible use of AI tools in research. This unit also guides students through crafting a complete research manuscript, including introduction, methodology, results, discussion, and conclusions, with emphasis on accurate data presentation, visualization, and proper manuscript formatting.

- Academic Writing principles and organization of ideas
- Plagiarism types, use of plagiarism-checking software & interpretation of plagiarism reports.
- Academic writing frameworks: IMRAD (Introduction, Methods, Results, Discussions) Structure and the TEEC (Topic sentence, Evidence, Explanation, Conclusion) Structure
- Ethical use of AI in academic writing
- Data Visualization: Principles, Types and Tools

UNIT II: Citation, Reference Management, Publication and Presentation of Research **12 Hours**

The unit focuses on mastering citation styles, managing references using software tools, and conducting efficient literature searches using databases and advanced search strategies. The unit further explores journal selection, ethical publishing practices, research paper writing, and the creation and delivery of effective presentations and posters for diverse academic audiences.

- Citation Management & formatting guidelines: Detailed application of specific styles (e.g., APA 7th, MLA, Chicago, Vancouver), managing in-text citations, citation index.
- Reference Management Software (RMS): Zotero, Mendeley and other citation tools; searching specialized databases (e.g., Scopus, Web of Science, ScienceDirect);
- Databases and Search Strategy- Key search terms, Boolean operators, PRISMA diagram
- Types and Selection of Journals: Predatory journals, Cloned journals; Open access and Paid Journals; Impact Factor and other metrics of Journals
- Research Paper writing and publishing in peer-reviewed journals, understanding journal-specific guidelines.
- Formulating and Presenting a Research Poster
- Presentation Skills: Creating effective slides, summarizing complex findings for different audiences, and managing Q&A sessions.

Essential Readings:

UNIT 1

This unit introduces the essential principles of scholarly writing required for academic research. It focuses on developing clarity, precision, and coherence in written work while maintaining an appropriate academic tone. This unit also familiarizes students with accurate citation practices and systematic reference management in academic writing. Further, the unit covers the correct presentation of tables, figures, and overall manuscript formatting in line with journal and institutional requirements. Students will gain practical skills necessary for producing professionally structured research documents.

- American Psychological Association. (2020). *Plagiarism* (7th ed.). APA Style.

https://apastyle.apa.org/style-grammar-guidelines/citations/plagiarism
- American Psychological Association. (2020). *Sample tables* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/tables- figures/sample-tables
- American Psychological Association. (2023). *Citing generative AI in APA Style: Part 1—Reference formats*. APA Style Blog. https://apastyle.apa.org/blog/cite-generative-ai-references
- Thomas, C. George (2021) Research Methodology and Scientific Writing (2nd ed.) Springer Nature

UNIT II

This unit focuses on the organization and presentation of a complete research report/document. Students will learn how to write each section of a research manuscript clearly and logically. The unit focusses on the processes involved in publishing and presenting research work. It covers the selection of appropriate journals, awareness of unethical publishing practices, the basics of writing for peer-reviewed publications, effective research presentation skills, including poster preparation and oral presentations

- American Psychological Association. (2020). *Response to reviewers* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/research-publication/response-reviewers
- American Psychological Association. (2020). *Heading levels* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/paper- format/heading-levels
- Hamilton College. (n.d.). *How to write an APA research paper*. https://www.hamilton.edu/academics/centers/writing/writing-resources/how-to-write-an-apa-research-paper
- Montclair State University. (2021). *How to prepare your dissertation in APA Style*. https://www.montclair.edu/graduate/wp-content/uploads/sites/58/2021/01/DISSERTATION-GUIDELINES-FOR-APA-STYLE-1-2021.pdf
- Tullu, M. S., & Karande, S. (2017). *Writing a model research paper: A roadmap*. *Journal of Postgraduate Medicine*, *63*(3), 143–146. https://doi.org/10.4103/jpgm.JPGM_325_17

Suggested Readings:

- AME Publishing Company. (2022). *Discussion and conclusion*. https://cdn.amegroups.cn/journals/vats/files/journals/27/articles/4955/public/4955-PB1-8866-R1.pdf?filename=amj-04-26.pdf
- McLeod, S. (2023). *How to write a methods section for a psychology paper*. Very well Mind. https://www.verywellmind.com/how-to-write-a-method- section-2795726

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Research Methodology Courses