Annexure 5.1

Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD)
Re-accredited with A++ Grade by NAAC. CGPA 3.65/4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Department of Textiles and Clothing
M.Sc. Textiles and Fashion Apparel

Programme Outcomes:

The Graduates will be able to

PO 1 - Disciplinary knowledge: Understand the heritage textiles, fashion designing, textile production, processing and evaluation of textiles

PO 2 - Communication skills: Express information and ideas confidently to propose design concepts and techniques with good interpersonal communication skills

PO 3 - Critical thinking: Apply acquired knowledge and skills to draw solutions for practicing and modifying the existing methodologies

PO 4 - Problem solving: Extrapolate the acquired knowledge to develop a solution for sustainable fashion and combat environment textile pollution

PO 5 - Research related skills: Execute research with scientific understanding to transfer thoughts into reality through appropriate research methods

PO 6 - Team work: Work as an individual and in diverse teams for establishing an identity in the chosen textile field

PO 7 - Information digital literacy: Access latest developments in computer aided designing and use appropriate software to create designs, patterns and illustrations for fashion industry

PO 8 - Moral and ethical awareness: Imbibe ethical values, recognize the need for research ethics and implement in their personal and professional career

PO 9 - Self directed learning: Carry out independent research, develop innovative and creative design concepts considering cultural and aesthetic trends

PO 10 - Life-long learning: Practice the acquired knowledge in textiles and fashion, arts and crafts for life-long learning

PO 11 - Reflective Thinking: develop skills to identify resources, self learning techniques to enhance creativity, understand ethical issues for entrepreneurship

Programme Specific Outcomes:

PSO 1 - Gain expertise in heritage textiles, Costumes, fashion designing, accessory designing, advanced textile production and processing

PSO 2 - Obtain experience in fashion portfolio, garment making, textile fabrication techniques, textile testing, textile management and quality control methods.

PSO 3 - Undertake various need based and multidisciplinary eco-friendly researches, economic management and marketing techniques.

Scheme of Instruction and Examination
(For students admitted from 2023 – 2024 onwards)

Part	Subject Code	Name of Paper / Component	Hours of instruction/ week		Scheme Examination				
			T	P	Duration of exam	CIA	CE	Total	Credit
First Semester									
I	23MTFC01	World Costumes	4	-	3	40	60	100	4
	23MTFC02	Textile Production Processes	4	-	3	40	60	100	5
	23MTFC03	Advanced Textile Processing	4	-	3	40	60	100	5
	23MTFC04	Research Methods and Statistical Applications	5	-	3	40	60	100	4
	23MTFC05	Fashion Portfolio (Practical)	-	6	3	40	60	100	4
	23MTFC06	Dyeing and Printing (Practical)	-	5	3	40	60	100	4
II		**CSS/ Adult Education/ Community Engagement and Social Responsibility**	2	-	-	-	-	-	-
Second Semester									
I	23MTFC07	Knitting Technology	4	-	3	40	60	100	4
	23MTFC08	Technical Textiles	4	-	3	40	60	100	4
	23MTFC09	Sustainable Textiles and Fashion	3	-	3	40	60	100	4
	23MTFC10	Textile Management	3	-	3	40	60	100	4
	23MTFC11	Textile Testing (Practical)	-	5	3	40	60	100	4
	23MTFC12	Fashion Accessories (Practical)	-	5	3	40	60	100	4
	23MTFC13	Mini Project	-	-	-	100	-	100	2
		Interdisciplinary course	4	-	3	40	60	100	4
II	23MXCSS1/ 23MXAED1/ 23MXCSR1	**CSS/ Adult Education/ Community Engagement and Social Responsibility**	2	-	-	-	-	100	2
		Professional Certificate Course	-	-	-	-	-	-	2
Internship during Summer Vacation for 30 days									
Third Semester									
I	23MTFC14	Textile Economics and Marketing	4	-	3	40	60	100	4
	23MTFC15	Clothing Standards and Specifications	4	-	3	40	60	100	4
	23MTFC16	Fashion Presentation (Open Book Test)	4	-	-	100	-	100	3
	23MTFC17	Nonwoven Technology	4	-	3	40	60	100	4
	23MTFC18	Advanced Fashion Apparel	-	6	3	40	60	100	4

		Designing (Practical)							
	23MTFC19	CAD for Fashion Apparel (Practical)	-	5	3	40	60	100	3
	23MTFC20	Fashion Draping (Self Study)	1	-	3	40	60	100	4
		Multidisciplinary course	2		3	100	-	100	2
II	23MTFC21	**Internship**	-	-	-	100	-	100	2
Fourth Semester									
I	23MTFC22	Research Project	-	30	-	100	100	200	8
								Total Credits	**98**

Other courses to be undergone by the student:

MOOC courses: 2 to 4 Credits

Note: Minimum 98 + 2 Credits to earn the degree

Courses offered by the department:

- **Inter Disciplinary Course :** 23MTFI01 Fundamentals of Textiles
- **Multi Disciplinary Course :** 23MTFM01 Eco Friendly Textiles

PROFESSIONAL CERTIFICATE COURSE

Course Code	Name of the courses	In collaboration with	No. of days
23MTFPC1	Medical Textiles	South Indian Textile Research Association (**SITRA**), Coimbatore.	10
23MTFPC2	Designing and Constructing Leather Goods	Footwear Design and Development Institute (**FDDI**), Kancheepuram, Tamil Nadu.	7
23MTFPC3	Physical and Chemical Testing Method of Textile Materials	Central Silk Technological Research Institute (**CSTRI**), Bangalore.	10
23MTFPC4	Silk Dyeing, Printing and Finishing	Central Silk Technological Research Institute (**CSTRI**), Bangalore.	10
23MTFPC5	Designing on Dobby and Jacquard	Central Silk Technological Research Institute (**CSTRI**), Bangalore.	10
23MTFPC6	Advanced Industrial Pattern Making	C - Cube Technologies Pvt. Ltd., Coimbatore	7
23MTFPC7	Advanced Computerized Textile Designing	C - Cube Technologies Pvt. Ltd., Coimbatore	7

Semester I	**World Costumes**	**Hrs of instruction/week: 4**
23MTFC01		**No of credits: 4**

Course Objectives:

- To gain knowledge on traditional costumes of various countries.
- To learn the ancient world art.

Unit I	**Ancient Indian costumes** - Gupta period, Kushan period, Satavahana period, Maurya and Sunga period - Costumes of male and female, ornaments, accessories and **head wears***.	**10 hrs**
Unit II	**European Costumes** – British, Greece, Roman, Egypt, Sweden, Denmark, Germany, Switzerland, Poland and Netherland Men – **Women- accessories**	**15 hrs**
Unit III	Costumes of far Eastern Countries – Japan, Hong Kong, Srilanka, Pakistan, Malaysia, China, Burma and Thailand- **Men and Women Costume*.**	**15 hrs**
Unit IV	**American Costumes** – Men's and Women's Costume – 17th, 18th, 19th and **21th Century*.**	**10 hrs**
Unit V	**World art** – Gond art, Madhubani art, Cubism, **Futurism***, Dada, Pop art, German expression, **Romantism and Futurism*.**	**10 hrs**

***Self Study** **Total Hours: 60 hrs**

References:

Text Books:

1. **Carolyn G. Bradley, (2001).** "Western World Costume an Outline History". Dover Publications, Mineola.
2. **John E. Vollmer, (2011).** Encyclopedia of World Dress and Fashion: East Asia: Volume 6, Oxford University Press, UK.
3. **Mary G Houston, (2013).** Ancient Greek, Roman and Byzantine Costume, Dover Publications, Mineola.
4. **Patricia Rieff Anawalt, (2007).** The Worldwide History of Dress, Thames & Hudson, USA.

Reference Books:

1. **Dorling Kindersley, (2012).** Fashion- The Ultimate Book of Costume and Style, Published by Dorling Kindersley Limited; London
2. **John Peacock, (2010).** "The Chronicle of Western Costume", Thames and Hudson Publisher, USA.
3. **Philip Steele, (2005).** "A History of Fashion and Costume", Volume 7, Bailey Publishing Associates Ltd, New York.

4. **Vishu Arora, (2018).** "Suvasas-The Beautiful Costumes", Abhishek Publication, Chandigarh, India.

Course Outcomes:

- Understand the ethnicity of historical costumes and arts around the world
- Interpret the periodical costumes of men and women with reference to style and fabric
- Differentiate the accessories of men and women in ancient period of various regions
- Evaluate the uniqueness of the world costumes and the art forms
- Develop an ancient costume inspired fashion garment with accessories

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	3	-	-	1	-	-	-	1	3	2	-	2	-	-
CO 2	3	-	-	1	1	-	-	-	2	2	1	2	-	-
CO 3	3	-	1	-	-	-	-	-	2	3	-	2	-	-
CO 4	3	-	2	1	1	-	-	-	2	3	1	3	-	2
CO 5	3	1	2	2	1	2	3	-	3	3	1	3	-	2

Semester I **23MTFC02**	**Textile Production Processes**	**Hrs of instruction/week: 4** **No of credits: 5**

Course Objectives:

- To enable students to study spinning and weaving process
- To facilitate students to prepare samples in textile production unit.

Unit I	**Spinning** – meaning and types, **Hand spinning** - character of hand spun yarn and significance of Indian handlooms. **Machine spinning** - Steps involved and types, Difference between handspun and machine spun fabrics. **Yarn:** Definition, classification, spun, filament, carded, combed, yarn twist and types, yarn numbering, yarn count, yarn hairiness, yarn defects. Fancy yarn – parts, classification, significance. Sewing thread. **Preparation of yarn for weaving*** - winding, warping (direct and indirect), sizing/ slashing and tying in/drawing in.	**15 hrs**
Unit II	**Weaving: History** – Horizontal, backstrap, handloom, power loom, Sequence of operations in weaving. **Weaving mechanism**: primary (shedding, picking, beating up), secondary (take up and let off) and auxiliary loom mechanism, **Types of weaves and its characteristics** – basic (plain, rib, basket, twill -left, right, diagonal, satin and sateen) and fancy weaves (swivel, spot, pile - cut and uncut, double cloth, leno and crepe) **Selvedge formation techniques*** – Fringed, shuttle, leno and tucked in.	**15 hrs**
Unit III	**Classification of weaving machines: Single phase weaving machine:** Shuttle: Hand loom and Power loom, Shuttle less - Projectile (single and multiple), Rapier (Rigid, flexible and telescopic), Jet (Water jet and air jet – single and multi-air-jet) **Multiphase weaving machine*:** Warp wave, Filling wave – circular and flat	**10 hrs**
Unit IV	**Dobby:** Scope of dobby, types (lattice and barrel), difference between positive and negative dobby, working, end use and properties of dobby, **Jacquard:** History, types, character of jacquard weave, fabric names, card cutting and lacing (hand and machine), **point paper design***	**10 hrs**
Unit V	**Preparation of samples in production lab:** Record will hold a sample of carded, combed, blended yarn along with a sample of woven and knitted fabric. The needle punched and thermal bonded sample. Swatch of point paper design and **a prototype card cutting sample***.	**10 hrs**
***Self Study**	**Total Hours:**	**60 hrs**

References:

Text Books:

1. **Behera B K and Hari P K, (2010).** Woven Textile Structure: Theory and Applications, Wood Head Publishing Ltd., New Delhi.
2. **Lord, P. R. (2003).** Handbook of Yarn Production: Technology, Science and Economics, Elsevier Science, United Kingdom.
3. **Sabit Adanur, (2000).** Handbook of Weaving, CRC Press, U.S.A.
4. **Seema Sekhri, (2011).** Textbook of Fabric Science: Fundamentals to Finishing, PHI Learning Pvt Limited., New Delhi.

Reference Books:

1. **Bernard P. Corbman, (2005).** Textiles Fiber to Fabric, Sixth edition, McGraw Hill International Editions, New Delhi.
2. **Faheem Uddin, (2019).** Textile Manufacturing Processes, IntechOpen, United Kingdom.
3. **Ingrid Johnson, Allen C. Cohen, Ajoy K. Sarkar, J.J, (2015).** Pizzuto's Fabric Science, Bloomsbury Academic, London.
4. **Sara, (2013).** Spin to Weave: The Weaver's Guide to Making Yarn, Interweave Press, LLC,USA.

Course Outcomes:

- Understand yarn spinning, types, weaves, their structures and weaving machine types
- Relate spinning methods, yarn and fabric properties types and weaving techniques for fabric production
- Compare and distinguish yarn and fabric types, weave structures and weaving machines
- Evaluate yarn and fabric properties ,weaving machines for various product developments
- Develop yarn and fabric samples and weave designs

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO1	PSO2	PSO3
CO 1	3	-	-	-	1	-	-	1	-	2	-	1	-	-
CO 2	2	3	-	-	-	-	-	-	-	3	-	1	-	-
CO 3	2	1	-	-	-	-	-	-	-	3	-	-	2	-
CO 4	-	-	2	1	2	-	-	-	1	3	1	-	1	1
CO 5	-	-	2	2	1	1	-	-	1	3	2	1	2	1

Semester I **Advanced Textile Processing** **Hrs of instruction/week: 4**

23MTFC03 **No of credits: 5**

Course Objectives:

- To gain knowledge on textile processing
- To understand the concepts of bio-processing and Effluent treatment

Unit I **Textile Dyeing** **15 hrs**

Preparatory processing- Need for processing. Desizing, scouring, bleaching, mercerizing and degumming. Classification of dyes – Natural and synthetic. Stages of dyeing - Fiber, Yarn, Fabric and Garment. Dyeing Machine - Types, jigger machine, Winch, Soft flow jet, HTHP beam, Padding Mangle dyeing machine. **Recent developments in dyeing***-Ultrasonic dyeing, Microwave assisted dyeing, super critical carbon dioxide dyeing. UV, plasma and ozone induced coloration.

Unit II **Textile Printing** **10 hrs**

Introduction, Preparation of printing paste. Styles of printing-Direct - block, stencil, screen, roller, duplex, rotary, and transfer printing. Resist – batik, tie and dye. Discharge printing. Minor printing methods- flocking, marbling, blotch, jetspray, digital printing, photo printing, warp printing and air brush printing. After treatment of printed fabrics. **Emerging techniques in printing***

Unit III **Textile Finishing** **15 hrs**

Basic finishes- Calendaring, tentering, stiffening, weighting, carbonising, crabbing, decating, beetling, glazing, schrenerizing, embossing, moiering, ciering, napping. Special finishes-Water repellent, Flame retardant, anti-microbial, UV protection, crease resistant, crepe and crinkle effect, softening. Introduction to plasma and **microencapsulation finishing techniques***

Unit IV **Textile Bio-Processing:** Enzymes – Introduction, Mechanism of action. Factors affecting enzyme activity- pH, temperature, substrate concentration and enzyme concentration. Application in textile processing - Bio-desizing, Bio Scouring, Bio Bleaching, Bio-polishing, Denim Fading, Flax retting and degumming. Role of enzymes in detergents. **Enzymes in treatment of textile dye effluent*.** **10 hrs**

Unit V **Textile Effluent generation and treatment** **10 hrs**

Effluent generation and their characteristics-Sizing, desizing, scouring, bleaching, mercerizing, dyeing, printing and finishing. Effluent treatment-Primary treatment-screening, sedimentation, equalization, neutralization, coagulation. Secondary treatment- aerated lagoons, trickling filtration, activated sludge process, oxidation ponds, anaerobic digestion. Tertiary treatment-evaporation, reverse osmosis, dialysis, ion exchange, chemical precipitation, activated carbon treatment.

***Self Study** **Total Hours: 60 hrs**

References:

Text Books:

1. **Abhijit Majundar, Apurba Das, R. Alagirusamy and V.K. Kothari, (2012).** Process Control in Textile Manufacturing, Woodhead Publishing, USA.
2. **Arora. A, (2011).** Textbook of Dyes, Sonali Publications, New Delhi.
3. **Arturcavaco Paulo, (2003).** Textile Processing with Enzymes, Textile Institute, Wood Head Publishing Ltd, U.K.
4. **Manivasagam, N., (2003).** Treatment of Textile Processing Effluents Including Analysis, Sakthi publications, Coimbatore, Tamilnadu, India.

Reference Books:

1. **Asim Kumar Roy Choudhury, (2006).** Textile Preparation and Dyeing, Science Publishers, USA.
2. **Burkhard Wulfhorst, Thomas Gries, Dieter Veit, (2006).** Textile Technology Hanson Gardner Publications, Germany.
3. **Deepali Rastogi and Sheetal Chopra, (2017).** Textile Science, Orient Blackswan Pvt. Ltd., Hyderabad, India.
4. **Vigo, T., (2013).** Textile Processing and Properties: Preparation, Dyeing, Finishing and Performance, Elsevier Science, Netherlands.

Course Outcomes:

- Explain various Dyeing, Printing and Finishing on textiles
- Execute Pre and Post treatment on textiles
- Compare and Contrast Bio processing and Chemical processing
- Select and defend suitable method of processing for various materials
- Investigate and develop processing methods

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	3	3	2	-	-	3	-	3	1	3	-	3	-	2
CO 2	2	2	1	2	3	2	-	-	2	2	2	3	-	3
CO 3	2	1	3	3	2	2	2	-	2	2	2	2	-	2
CO 4	3	1	2	2	2	1	-	-	2	2	3	3	-	-
CO 5	2	1	3	3	3	-	3	2	3	3	3	2	-	3

Semester I	**Research Methods and Statistical Applications**	**Hrs of Instruction /week: 5**
23MTFC04		**No. of Credits: 4**

Course Objectives:

- To understand the fundamental principles and techniques of methodology concerning research.
- To use effective tools and techniques to collect research data, organize them appropriately for facilitating further analysis.
- To enable students conduct research work, formulate synopsis and report writing.

Unit I	**Introduction to Research, Types of Research and Research process** Definition, Objectives, significance and characteristics of research Types of Research - Descriptive, analytical, applied, fundamental, quantitative, qualitative, conceptual, empirical and current types of research Hypothesis – Definition, concepts, tests of hypothesis, Basic components of research design, Sampling design- Probability and non probability sampling methods	**10 hrs**
Unit II	**Data and Tools of Data Collection** Primary and secondary data and data sources - Interview, observation, schedule and questionnaires – Definition, types, requirements, advantages, disadvantages, limitations, Census Vs Sample Survey, Pre-testing and pilot study, Editing and coding of data	**11 hrs**
Unit III	**Organization and Representation of Data , Report writing** Classification - Definition, objectives, requisites, methods, qualitative, Quantitative; frequency distribution – definition, terms; discrete and continuous Tabulation of data- parts of a table, preparation of blank tables, Diagrammatic – One dimensional diagrams, two dimensional diagrams, pictogram and cartographs, Graphical- Frequency graphs- line , polygon, curve, histogram, Cumulative frequency graphs- ogives ***Components or layout of a thesis (Self Study)***	**12 hrs**
Unit IV	**Descriptive Measures** Mean*, median*, mode* and their applications Measures of dispersion- standard deviation, coefficient of variation, percentiles* and percentile ranks*, Correlation coefficient* and its interpretation, Rank correlation*, Regression equations* and predictions. Association of attributes , contingency table	**19 hrs**
Unit V	**Probability and Tests of Significance** Rules of probability and its applications , Normal, binomial –properties, importance in research studies, Wilcoxan Rank Test, Mann Whitnes U test, Kruskal Wallis Test Large and small sample tests -'t'*, F* and chi square tests* ANOVA* and applications, Multiple paired comparison test - DMRT test, Tukeys test, Statistical software – SPSS	**23 hrs**

*** Inclusive of Simple problems** **Total Hours: 75 hrs**

Related Experiences:

1. Identifying the research problems under each type
2. Formulation of questionnaires and schedules
3. Consolidating data and forming tables
4. Drawing graphs and diagrams appropriately
5. Working out numerical sums and interpret
6. Numerical applications and drawing inferences, demonstration of SPSS

References:

Text books:

1. **C.R. Kothari and Gaurav Garg, (2019).** Research Methodology: Methods and Technique, New Age International Publishers, 4th Edition.
2. **G.C.Ramamurthy, (2011).** Research Methodology, Kindle Edition, Dreamtech Press.
3. **Lawrence, E. K., Adams, K. A, (2018).** Research Methods, Statistics, and Applications. SAGE Publications, United States.
4. **S. P. Gupta, (2012).** Statistical Methods, Sultan Chand & Sons.
5. **S.C. Gupta and VK Kapoor, (2014).** Fundamentals of Mathematical Statistics, Sultan Chand & Sons

Reference Books:

1. **Devadas.R.P, (2000).** A Handbook on methodology of Research, Sri Ramakrishna Vidyalaya, Coimbatore.
2. **Ghosh.B.N, (2015).** Scientific Methods and Social Research Sterling Publishers Pvt. Ltd. New Delhi.
3. **Kulbir Singh Sidhu, (2006).** Methodology of Research in Education Sterling Publishers Pvt. Ltd., New Delhi.
4. **Ranjit Kumar, (2011).** Research Methodology, SAGE publications, 3rd Edition.
5. **Srivastava.A.B.L and Sharma. K.K, (2003).** Elementary Statistics in Psychology and Education, Sterling Publishers Pvt. Ltd.

Course Outcomes:

- Understand the various kinds, objectives design and sampling, process, of research
- Encompass adequate knowledge on qualitative and quantitative research techniques
- Design the tools for collection, identification of samples, interpretation of data with the use of tables and pictorial representations
- Assess the numerical data for providing statistical evidences to support the research results
- Enable to become a qualified researcher

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	-	-	2	2	2	-	-	2	-	1	-	-	1	3
CO 2	-	3	2	2	2	1	-	2	1	1	2	-	1	3
CO 3	-	2	2	2	2	1	2	2	1	1	2	-	1	3
CO 4	-	2	2	2	2	-	2	2	-	-	2	-	1	3
CO 5	-	3	2	2	2	-	1	1	-	-	-	-	-	3

Semester I **Fashion Portfolio (Practical)** **Hrs of instruction/week: 6**
23MTFC05 **No of credits: 4**

Course Objectives:

- To enable the students to source designs and visualize the concepts
- To enable the students to present portfolio and construct theme based garments

Unit I	**Fashion Research and Inspiration** – Sketching of silhouettes inspired from pre historic and ancient era for men, women and children's wear.	**15 hrs**
Unit II	**Visual Design Concepts** – Sketching male and female fashion figures- front, turned and back views. Sketching and Rendering, Rendering textures on garment, Sketching of garment details on croquie with suitable hair styles and accessories.	**15 hrs**
Unit III	**Sketching from Photograph and imagination** – Sketch fashion figures for men, women and children from photographs and manipulate for various occasions.	**20 hrs**
Unit IV	**Fashion Portfolio Presentation** – Development of fashion portfolio – customer profile, theme board, mood board, colour board, fabric board, flat presentation, story board and accessory board.	**20 hrs**
Unit V	**Construction of theme based garment** – pattern development, sourcing of materials and accessories, garment construction and fit analysis. Presenting theme based garment on ramp.	**20 hrs**
	Total Hours:	**90 hrs**

References:

Text Books:

1. **Albu, T., Nahum-Albright, M. (2023).** Fashion Portfolio, Quercus Publishing, United Kingdom
2. **Navneet Kaur, (2010).** Comdex fashion design, Vol III, Designing and showcasing a fashion collection, Dream Tech Press, New Delhi
3. **Tiziana Paci, (2018).** Colour in Fashion Illustration: Drawing and Painting Techniques, Hoaki Books SL, Italy.
4. **Veronica Kemsky, (2017).** Fashion Illustration Gowns and Dresses Inspiration, Design Media Publishing Limited, UK.

Reference Books:

1. **Anna Kiper, (2016).** Fashion Portfolio Design and Presentation, Pavilion Books, Batsford.
2. **Barrett, J. C. (2013).** Designing Your Fashion Portfolio: From Concept to Presentation, Fairchild Books, United States.
3. **Patrick John Ireland, (2005).** Fashion Design Illustration, Om Book International, New Delhi.
4. **Ritu Bhargae, (2005).** Fashion Illustration and Rendering, B.Jain Publisher Ltd, New Delhi.

Course Outcomes:

- Illustrate the silhouettes and garment styles inspired from prehistoric and ancient era
- Identify silhouettes to render theme based garments and accessories for developing visual design concepts
- Experiment various rendering techniques to illustrate garment details, accessories, trimmings and decorations and hair styles
- Select appropriate styles suitable for various occasion based on themes
- Design, develop and construct theme based garments

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	1	1	-	-	-	-	--	-	1	3	-	3	3	-
CO 2	1	1	-	-	-	1	-	-	1	2	1	3	3	-
CO 3	1	3	1	1	-	-	-	-	1	2	1	3	3	-
CO 4	1	3	1	2	-	1	2	-	2	2	1	3	3	-
CO 5	1	3	2	2	1	1	2	2	3	3	2	3	3	1

Semester I	**Dyeing and Printing (Practical)**	**Hrs of instruction/week: 5**
23MTFC06		**No of credits: 4**

Course Objectives:

- To gain practical knowledge about preparatory process of fabric
- To gain practical experience in dyeing and printing

Unit I	**Preparatory Process for Dyeing & Printing**– Desizing and determination of starch content, Scouring of desized cotton fabrics, Bleaching of scoured fabric with hydrogen peroxide and Mercerizing of cotton fabric Preparatory Process of Silk Fabric – Degumming, Bleaching.	**15 hrs**
Unit II	**Printing of woven and knitted fabric using different techniques** – Stencil, Screen, Block, Batik, Tie and dye style	**15 hrs**
Unit III	**Dyeing**- Dyeing cotton, wool, silk, polyster and blends using direct and reactive, vat, sulphur, acid, basic.	**15 hrs**
Unit IV	**Natural dyes**- Extraction, optimization and dyeing using plant, animal and mineral sources.	**15 hrs**
Unit V	**Finishing** - Anti-microbial finish, Bio-polishing finish using Plasma, Microencapsulation and Nano technique.	**15 hrs**
	Total Hours:	**75 hrs**

References:

Text Books:

1. **Jeyakodi Moses. J, (2017).** "Laboratory Manual of Textile wet/chemical processing", Laser Park Publishing House, Coimbatore.
2. **Kapoor Seema, (2012).** Dyeing of Textile Material, Sonali Publications, New Delhi.
3. **NIIR Board of Consultants and Engineers, (2005).** The Complete Book on Natural Dyes and Pigments, Asia Pacific Business Press Inc, New Delhi.
4. **P. Vinayagamurthi, S. Kavitha and D. Gopalkrishnan, (2018).** Textile Finishing: Basic Concepts and Application, Indian Books and Periodicals, New Delhi.
5. **Shenal, V. A., (2012).**"Technology of textiles Processing, Chemistry of Dyes and Principles of Dyeing", A Sevak Publication, Bombay.

References Books:

1. **Asim Kumar Roy Choudhury, (2016).** Textile preparation and dyeing, Science Publishers, USA.
2. **Asim Kumar Roy Choudhury, (2022).** Principles of Textile Printing, Taylor and Francis Ltd.
3. **Himadri Panda (2016).** Modern Technology of Textile Dyes and Pigments, NIIR Project Consultancy Services, Asia Pacific Business Press, New Delhi.
4. **M.L. Gulkajami, (2013).** Advanced in the Dyeing and Finishing of Technical Textiles, Wood Head Publishing, Oxford Cambridge, Philadelphia, and New Delhi.
5. **N.N. Mahapatre, (2016).** Textile Dyes, Woodhead Publishing India CRC Press, New Delhi.

Course Outcomes:

- Discuss various Dyeing, Printing on textiles
- Implement Pre and Post treatment on textiles
- Distinguish natural and synthetic processing
- Decide suitable method of processing
- Create various products using different processing methods

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	2	3	3	2	1	3	-	1	1	3	-	3	-	1
CO 2	2	2	1	2	2	2	-	1	2	3	1	2	-	2
CO 3	3	2	3	-	-	2	-	-	2	2	-	2	-	3
CO 4	2	2	2	2	2	1	-	2	2	2	2	3	-	2
CO 5	2	1	2	2	3	-	-	3	3	1	2	2	-	2

Semester II **Knitting Technology** **Hrs of instruction/week: 4**

23MTFC07 **No of credits: 4**

Courses Objectives:

- To study the basic principles and different types of knitting.
- To study the mechanism involved in weft and warp knitting.

Unit I **Introduction to Knitting** **10 hrs**

History, Difference between Weaving and Knitting*- Yarn quality requirement and properties of knitted fabrics. Hand knitting & Machine knitting - Classification of knitting - Principles of weft and warp knitting-Comparison of weft and warp knitting-Knitting Terms and Definitions. Knitting elements – Needles, Sinker, CAM, Cylinder, Dial. Yarn feeders – Spreader – Fabric take down- Drives and controls.

Unit II **Weft Knitting Machine** **10 hrs**

Yarn passage, **Parts and function - Circular Knitting Machine***- Knitting Cycle of Latch Needle, Bearded Needle and Compound Needle. Rib knitting Machine - Needle gating - Needle Timings - Knitting Cycle. Interlock knitting Machine - Knitting cycle. Jacquard knitting – Pattern wheel, Pattern drum, Tape patterning devices, Electronic devices.

Unit III **Weft Knit Structures** **15 hrs**

Formation of knit, tuck and float stitches. Influence of loop length and shape on fabric properties. Basic weft knitted structures and fabric properties- Plain, Rib, Interlock and Purl structures - Derivatives of plain: La coste, Satin, Accordian fabrics, Fair Isle, Weft lock knit, plaiting. - Derivatives of Rib: Half cardigan, Full cardigan, Milano Rib. - Derivatives of Interlock: Eight lock, single pique, Ponte-di-Roma, Ottoman Rib. **Knitted fabric faults, their causes and remedies*.**

Unit IV **Flat and Socks Knitting** **10 hrs**

Flat knitting machines - Basic principles – Knitting elements - Classification of flat knitting machines. Yarn passage, parts and function. Production of various fabric designs with flat knitting machines. **Socks Knitting - Basic principles** *– Knitting elements - Yarn passage, parts and function of socks knitting machine. Knit a sample fabric in circular knitting machine.

Unit V **Warp Knitting** **15 hrs**

Comparison between warp knitting and weft knitting*. Classification of warp knitting. Warp knitting elements - Needle, Sinker, Guide, Pattern wheel. Yarn passage, parts and function - Tricot Knitting machine and knitting cycle - Raschel knitting machine and knitting cycle - Double needle bar knitting machine. Warp knitted structures: loop raised, satin, lock knit, two bar tricot, reverse lock knit, shark skin, queens cord, open Atlas, Closed Atlas.

***Self Study** **Total Hours: 60 hrs**

References:

Text Books:

1. **D.B Ajgaonkar., (2006).** "Knitting Technology", Universal Publication Corporation, Mumbai,
2. **Parmar M (2013).** Knitting, Random Publications, New Delhi.
3. **Sadhan Chandra Ray, (2015).** "Fundamentals and Advances in Knitting Technology", Woodhead Publishing India, New Delhi.
4. **Seema Kapoor (2012).** Modern Knitting Technology, Sonali Publications, New Delhi.
5. **YordanKyosev, (2019).** "Warp Knitted Fabrics Construction" Taylors and Francis Group, CRC Press, England.

Reference Books:

1. **Anbumani. N, (2007).** Knitting Fundamentals, Machines, Structures and Developments, New Age Publications, New Delhi.
2. **D.J.Spencer, (2001).** "Knitting Technology: A Comprehensive Handbook and Practical Guide", Woodhead Publishing Limited, Cambridge.
3. **Dr Kin-Fan Au, (2011).** Advanced knitting Technology, Woodhead Publication.
4. **K. Thangamani and S. Sundaresan, (2022).** Fabric Manufacturing Technology - Weaving and Knitting, CRC Press Taylor and Francis, England.
5. **Ray, (2011).** Fundamentals and Advances in Knitting Technology, Woodhead Publications, United Kingdom.

Course Outcomes:

- Understand the basic principles and mechanism of knitting production
- Classify and understand knitted fabric production methods
- Execute acquired knowledge to identify different knitted structures
- Compare different warp and weft knitted methods
- Create new designs for knitted fabrics based on the acquired knowledge

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	3	-	-	-	-	-	-	-	-	-	-	3	-	-
CO 2	3	-	2	1	1	-	-	-	1	-	1	-	3	-
CO 3	-	-	2	2	-	-	-	-	-	-	-	-	3	-
CO 4	-	-	2	2	-	-	-	-	-	-	-	-	3	-
CO 5	2	1	3	-	2	-	-	-	2	-	-	-	3	-

Semester II **Technical Textiles** **Hrs of instruction/week: 4**
23MTFC08 **No of credits: 4**

Course Objectives:

- To orient students to the field of technical textiles and enable them to learn the developments in the same
- To gain knowledge about advances in textiles and its applications.

Unit I	**Technical Textiles** – Introduction, definition and scope, Growth and development-future of technical textiles, Global Technical Textiles Market, Indian Technical Textiles Market. Technical fabric structure- woven and non woven. Electro spinning and 3d weaving and textile applications. **Upcoming techniques in fiber**-Stinging nettle fibres, Coffee ground fibres, Lotus fibres, Hemp fibers **yarn-** E-Thread technology – Stretchable Textile Yarn, Nomex, Kevlar, Spandex and Twaron **and fabric formation-** Pinatex, Orange fiber fabric, Econyl, Parblex, Algae-based textile, Lotus fabric, Spinnova fabric*	10 hrs
Unit II	**Industrial and Package Textiles** – Industrial Textiles -Introduction, Definition, Types - Decatising cloth, Bolting cloth, Absorbent Glass Mat Battery Separators, Cigarette Filter,Indutech Products- Coated abrasives Conveyor belts, Drive belt, Ropes & cordages, Printed circuit boards, Computer printer ribbon, Paper making fabricsFiltration Products, **Package Textiles*** -Polyolefin Woven Sacks, Flexible Intermediate Bulk Containers (FIBC),Tarpaulins, Leno bags, Lamination, Polyolefin Woven Sacks, Flexible Intermediate Bulk Containers, Leno bags- Jute Hessian and Sacks, Soft luggage products, Tea- bags, Carpet Backing Cloth, Textile Reinforced Composite Materials and their applications.New innovations in Packaging- Seaweed Packaging, 3D-Printed Packaging, Cellulose-Based Materials, Paper Used for Cosmetics, Moulded Fibre Printing, Plantable Packaging	10 hrs
Unit III	**Geo and FiltrationTextiles – Geo Textiles**- Introduction, Structure and performance, Nonpolymeric Fibres, High Performance Synthetic Fibres,newer fibres-geo synthesis, essential properties of geo textiles, natural fibre, geo textiles for soil strengthening. Friction resistance of geo textiles and **Standards for geo textiles**-IS 16653 : 2017, IS 16352:2015, IS 16090:2013, IS 16392:2015, IS 16393:2015*.**Filtration Textiles** - Introduction, Nano technicalFibres, Filters for Air Pollutants, Pollutant Capture Mechanism,dust collection, fabric construction, solid liquid separation.Applications-Water filtration in paper manufacture, Air filters in air conditioning system and automobile engines, Vacuum cleaners, power stations, chemical plants, sewage disposal etc.	10 hrs
Unit IV	**Medical, Defence and Automobile Textiles : MedicalTextiles** - Introduction-Definition, Scope and growth, Types- implantable and non implantable materials, extra corporal devices, health care and hygiene textiles fibres used and their properties. Properties, Nanotechnology in Medicine and Healthcare, Biocompatibility – Bioresorbability – Biostability, Testing Methods and Quality Control. Textiles in orthopaedics- Acrylic bone cements, Bone fixation devices, total joint arthroplasties, knee pads, artificial tendons Artificial Ligaments, , Bones Textiles in wound care- Surgical hosiery, bandages, wound care pads, Sutures plasters; Textiles in - Cardiology Tissue engineering, Vascular grafting Soft tissue implants Cardiovascular implants; Cardioverter Defibrillatore, Artificial Kidney, Blood, Vessels, Liver	15 hrs

Medical textiles in Dermatology- artificial skin, collagen
Medical textiles in Gynecology: bio-active and bio-inert polymers for closing surgical incisions, copper IUDs, the hormonal IUDs, contraceptive implants, vaginal rings, male and female condoms, Medical textiles in Audiolog-Cochlear Implants and Assistive Listening Devices.
Medical Textiles in Ophthalmology: Pseudophakia, lens contact lens
Ayurvastra or Ayurvedic textiles- Definition, Applications & importance
Defense Textiles for environmental protection, Chemical, Biological, Radiological, and Nuclear (CBRN) Protective Clothing thermal insulation materials, **camouflage concealment and deception, flame and heat protective textiles***, Ballistic and Sharp Weapon protective materials. **Survival textiles-** for tents, helmets, gloves, masks, survival bags and suits **Automobile Textiles** -Aeronautical and Space Textiles- Carbon ,Aramid/Kevlar, Glass, Vectran, Carbon Nanotubes, Graphenfibres. Introduction, textiles in cars, other road vehicles (small and large vehicles), rail applications, **Textiles in aircrafts-** Seat belt Webbing, Air bags, Carpets, Rotor blades, Wings, Fuel Tanks, Webbing for aircraft, Aircraft upholstery, Parasuits, Space shuttle, Space suits- Extravehicular Mobility Unit, **marine application-** Furnishing Fabrics, Inflatable Crafts, life rafts, buoyancy tubes, canopies and life jackets, and personal flotation devices, Hovercrafts Skirts, Oil Booms*, Future prospects.

Unit V **Home, Agro and Sports textiles -Home textiles***-Definition, fabrics used in exteriors and interiors, bed linens, floor coverings, wall coverings and window treatments, table, kitchen linens and bath linens. Textile in Architecture- New generation fibers, fabrics and structures **Agro Textiles-** definition, newer fibres fabrics their applications, types in green house cover, Capillary Mats ,fishing nets, nets for plants, rootless plants and protecting grassy areas, sun screens, wind shields and anti bird nets, Testing Standards Applicable to Agro textiles- IS 16008 (Part 1):2016, IS 16008 (Part 2):2016, IS 16513:2016, IS 16190:2014, IS 15351:2015
Sports Textiles: Introduction, Definition Special fibres, yarns fabrics for sports textiles, high performance applications, active textiles, wearable technology. Sustainability and ecological aspects **Application of textile in various sports- Artificial Turfs, Sports Net, Balls, Sports Footwear, Sports Net***

15 hrs

***Self Study** **Total Hours: 60 hrs**

References:

Text Books

1. **Horrocks, A.R., and Anand, S.C., (2016).** Hand book of Technical Textiles, second edition, The Textiles Institute, Wood Head Publishing Ltd, England.
2. **Kumar, R. S. (2016).** Textiles for Industrial Applications. CRC Press, United Kingdom.
3. **R.A. Chapman, (2010).** Applications of Nonwovens in Technical Textiles, Woodhead publishing, United Kingdom.
4. **Roshan Paul, (2019).** High Performance Technical Textiles, Woodhead publishing.

Reference books:

1. **A. Mukhopadhyay, Vinay Midha, (2021).** Recent Trends in Traditional and Technical Textiles: Select Proceedings of ICETT 2019. Springer, Singapore.
2. **Kunal Singha., Pintu Pandit., Subhankar Maity, (2023).** Functional and Technical Textiles, Elsevier Science, United Kingdom.
3. **Richard. A.Scott, (2005.)** Textiles for Protection, Wood Head Publishing Limited, Cambridge.
4. **Xiaoming Tao, (2019).** Advanced Technical Textile Products, CRC Press, United Kingdom.

Course Outcomes:

- Understand the Scope of Technical textiles in various fields
- Classify various types of technical textiles and its application
- Develop different geo, and industrial textile utilizing natural fibers
- Gain knowledge about the application of various textile fibers in medical textiles
- Transform the knowledge for fabric preparation in different fields of technical textiles

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	-	-	1	-	-	-	-	-	1	-	-	-	-	1
CO 2	-	-	1	-	-	-	-	-	1	3	-	-	-	2
CO 3	-	-	2	2	-	-	-	-	1	3	2	1	1	2
CO 4	-	1	2	2	-	-	-	-	3	2	2	-	1	2
CO 5	-	-	1	2	-	1	1	1	3	2	2	-	1	2

Semester II **Sustainable Textiles and Fashion** **Hrs of Instruction/ Week: 3**
23MTFC09 **No. of Credits: 4**

Course Objectives:

- To understand the concepts of sustainable textiles and Fashion
- To learn the techniques of sustainable production, processing, designing and recycling

Unit I	**Sustainable Textiles and Fashion:** Introduction, need for sustainability, consumer attitude, market for sustainable textiles and fashion products, environment sustainability, importance of reduce, recycle and reduce concepts in textile and garment sectors. Global scenario in Textile recycling.	**10 hrs**
Unit II	**Sustainable Textile Production**: Sustainable factors in yarn and fabric manufacturing, waste management in spinning and fabric manufacturing, Key environmental drivers in the textile industry- Legislation, Eco labels, Environmental Management System (EMS), retailers, green consumers, pressure groups, controlled colouration.	**10 hrs**
Unit III	**Sustainability in Textile Processing:** Natural Colourants and recent development, **Bio processing** of textiles - bio desizing, bio scouring, bio bleaching, bio polishing, bio stoning, enzymatic degumming and enzymatic retting. Developments in Natural finishing.	**10 hrs**
Unit IV	**Sustainable Fashion Design Process**:Production of sustainable fashion- the phases of fashion design and production, fashion designers role,sustainable strategies in design houses, link sustainable strategies with the fashion design and production process, Zero waste design practice,Textile recycling – **second hand Clothing, redesigning and case studies*.**	**7 hrs**
Unit V	**Sustainable Fashion Trend**: Sustainable fashion concepts – new fashion ethic and aesthetics, reversing fashion consumption, Locally made and globally relevant, negademand (negative demand),sharing and servicing. Fast fashion vs slow fashion, new normal, sustainable fashion supply chain, Fashion Logistic, sustainable Clothing care.	**8 hrs**
	Total Hours:	**45 hrs**

References:

Text Books:

1. **Claudia E. Henninger , Panayiota J. Alevizou, & Helen Goworek, (2017).** Sustainability in Fashion - A Cradle to Upcycle Approach, Palgrave Macmillan - Springer Nature, Switzerland.
2. **Jennifer Farley Gordon, Collean hill, (2014).** Sustainable Fashion: Past, Present and Future, Bloomsburry Publishing, London.

3. **Rajkishore Nayak, (2019).** Sustainable Technologies for Fashion and Textiles, Woodhead Publishing, UK.
4. **Subramanian Senthilkannan Muthu, (2017).** Textiles and Clothing Sustainability Recycled and Upcycled Textiles and Fashion, Springer, Singapore.
5. **Subramanian Senthilkannan Muthu, (2014).** Roadmap to Sustainable Textiles and Clothing Eco Friendly Raw Materials, Technologies and Processing Methods, Springer Publication, UK.

Reference Books:

1. **Alison Gwilt, Timo Rissanen, (2012).** Shaping Sustainable Fashion: Changing the way we make end use COths, Routledge, UK.
2. **Jochen strable, (2016).** Green Fashion Retail, Springer Publication, UK.
3. **Marion I. Tobler-Rohr, (2011).** Handbook of sustainable textile production, Woodhead Publishing Limited, New Delhi.
4. **Parthiban. M, Srikrishnan. M. R &Kandhavadivu.P, (2017).** Sustainability in Fashion and Apparels Challenges and Solutions, Wood Head Publishing India Pvt Ltd, New Delhi.
5. **Subramanian Senthilkannan Muthu, (2015).** Handbook of Life Cycle Assessment (LCA) of Textiles and clothing, Woodhead Publishing, UK.

Course Outcomes:

- Describe the need for sustainable textiles and fashion
- Use the methods of sustainable textile and fashion production
- Relate fashion design process and fashion consumption /trend with sustainability
- Select sustainable textile design and processing methods
- Develop sustainable fashion product

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	-	3	-	2	1	-	-	-	-	-	-	3	-	-
CO 2	2	-	2	3	2	-	-	-	3	-	2	2	2	2
CO 3	-	2	2	2	1	-	-	-	2	-	2	2	-	-
CO 4	2	2	2	2	2	-	-	1	3	-	2	2	-	2
CO 5	-	2	-	3	2	2	-	1	3	2	3	2	-	2

Semester II **Textile Management** **Hrs of instruction/week: 3**
23MTFC10 **No of credits: 4**

Course Objectives:

- To enable students to learn the concept of management prevailing in textile garment industries
- To understand the process of managing the resources.

Unit I **Textile and Human Resource Management** **10 hrs**

Textile Management – Introduction to textile management, Approach of POM, Operation strategies, Human Resource Management – Meaning, nature, objectives, scope and functions, importance of human factor, HRM department with reference to textile industry

Unit II **Production Operation and Costing Management** **10 hrs**

Manufacturing operations scheduling, work centers, facility layout,work load and work assignments. Costing – Raw material: Fiber, Yarn, Fabric, Accessories, Processing, Finishing, Sewing and packing.

Unit III **Training and Management Programme** **10 hrs**

Training – Planning training programme, types of training: Induction Training, Job Training, Training for Promotion and Refresher Training, common training practices in the textile industry. Management development programmes – objectives and methods

Unit IV **Sales Management and Forecasting** **7 hrs**

Formating sales policies, structuring the sales force and its size, designing sales territories, fixing sales quotas and targets. Advertising and Sales Promotion methods, Logistics and Supply chain. Sales Forecasting: Need, Methods, Survey Method , Selection of appropriate forecasting

Unit V **Human Rights and Disaster Management** **8 hrs**

Human rights – Definition, importance, fundamental rights. Human rights for women, children, workers in textile industry. Disaster Management – meaning, types of disaster management, Disaster management in textiles and apparel industry, its rescue and relief.

***Self Study** **Total Hours: 45 hrs**

References:

Text Books:

1. **Decenzo and Robbins, (2014).** Human Resource Management, Wiley, 6th edition.
2. **N. Gaither and G. Frazier, (2014).** Operation Management, Thompsan, Asia,
3. **Nandagopal, R, (2004).** Textile and clothing management. Allied Publishers, India.
4. **S. A. Chunwala and D. R. Patol, (2014).** Production and Operation Management, Himalayas.

Reference Books:

1. **Goel B. S, (2002).** Production Operations Management. Pragati Prakashan, India.
2. **Jack Donnelly, (2013).** Universal Human Rights in Theory and Practice, Cornell University Press, New York.
3. **Moon, D. M. A., Mentzer, J. T., (2005).** Sales Forecasting Management: A Demand Management Approach, SAGE Publications, United Kingdom.
4. **Stephen Bach, (2009).** Managing Human Resources: Personnel Management in Transition. Wiley, Germany.

Course Outcomes:

- Recognize various management operation strategies in Textile industry.
- Identify the functional operations of the management sectors in the textile industry.
- Differentiate the management, development and training programme organized in theindustry.
- Select and categorize appropriate managerial forecasting and costing methods.
- Formulate a productive management plan by integrating human rights with a wellorganized disaster management for various departments of the industry.

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO1	PSO2	PSO3
CO 1	1	-	1	-	1	2	-	1	1	-	-	1	-	-
CO 2	1	-	1	-	1	1	-	2	2	-	1	2	1	-
CO 3	1	-	2	-	-	-	-	-	-	-	-	1	-	-
CO 4	2	-	2	-	-	1	1	2	1	-	1	2	-	1
CO 5	2	2	2	-	-	2	2	3	2	-	2	3	-	2

Semester II 23MTFC11	**Textile Testing (Practical)**	**Hrs of instruction/week: 5** **No of credits: 4**

Course Objectives:

- To gain knowledge in the physical testing of textiles.
- To understand the standards used for physical testing.

Unit I	**Fibre testing** – Methods of fibre sampling for testing, Fibre – length analysis, moisture content and moisture regain. Reaction of fibres against chemicals- Acid and Alkali. **Diameter***	**15 hrs**
Unit II	**Yarn testing** – Lea strength, stress strain curves, Yarn appearance, Twist test, **crimp of yarn from fabric*.**	**15 hrs**
Unit III	**Woven fabric analysis** – width and length, bow and skewness,. **Fabric physical tests** – Ends and Picks per unit length, cover factor, weight, thickness, stiffness, crease recovery, strength and elongation and drapability. **Serviceability tests** – resistance to pilling and abrasion. **Absorbency tests** - Drop, wicking, spray **and sinking tests*.** Special test- flammability test, thermal conductivity test.	**15 hrs**
Unit IV	**Knitted and nonwoven fabric analysis – Knitted*** - Number of wales and courses, resistance to abrasion, resistance to pilling, bursting strength and dimensional stability. Nonwoven - strength, stiffness, weight, thickness and **Absorbency tests*.**	**15 hrs**
Unit V	**Colour fastness tests** – Colour fastness to sunlight – wet and dry crocking, wet and dry pressing. Perspiration – Acidic and alkaline, light washing **and Colour measurement using spectrophotometer*.**	**15 hrs**
	Total Hours:	**75 hrs**

References:

Text Books:

1. **Abher Rasheed, Ali Afzal, Faheem Ahmad, Sheraz Ahmad, (2017).** Advanced Textile Testing Techniques. CRC Press, United States.
2. **Booth J.E., (2018).** Principles of Textiles Testing, CBS Publishers and Distributors, New Delhi.
3. **Jewel Raul, (2005).** Textile Testing, APH Publishing Corporation New Delhi.
4. **Saville B.P., (2002).** Physical Testing of Textile, Wood Head Publishing Limited, England.

Reference Books:

1. **Amutha, K., (2016).** A Practical Guide to Textile Testing, Woodhead Publishing, India.
2. **Elliot Brown Grover, Dame Scott Hamby, (2007).** Handbook of Textile Testing and Quality control, Textile Book Publishers, New York.
3. **Jinlian HU., (2008).** Fabric Testing, Wood Head Publishing, in Textiles, Cambridge, England.
4. **Wang Lijing, (2016).** Performance Testing of Textiles, Methods, Technology and Applications, Woodhead Publishing, Elsevier Ltd, New Delhi.

Course Outcomes:

- Understand and recall the concepts of textile testing
- Classify and Select appropriate physical tests suitable for fibre, yarn and fabric
- Execute the testing methods and interpret data for assessing the textile properties
- Examine the textile properties to relate them for various purposes
- Investigate the basic and advanced properties pertinent to various end applications

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	2	1	1	-	3	-	-	1	1	-	-	1	3	1
CO 2	2	1	1	-	3	-	-	-	-	2	-	1	3	-
CO 3	1	1	1	1	2	-	-	-	-	-	-	1	3	-
CO 4	1	-	1	1	1	-	-	-	-	-	-	1	3	-
CO 5	1	-	1	2	1	1	-	2	2	2	1	1	3	1

Semester II	**Fashion Accessories (Practical)**	**Hrs of instruction/week: 5**
23MTFC12		**No of credits: 4**

Course Objectives:

- To develop creativity in styling and making fashion accessories
- To acquire skills in fashion accessory making with suitable materials

Unit I	**Designing, rendering textures and constructing/making selected items** Head ,Face and Neck accessories: Stole or Tie or Scarf/ Hat or Cap/ Mask	**15 hrs**
Unit II	Hand, Waist and Foot accessories: Gloves/ Belt or suspenders/ Shoe or Slipper	**15 hrs**
Unit III	Personal accessories: Bag or Pouch or Wallet/ Crunchies or Hair pins	**15 hrs**
Unit IV	Fashion Jewelry: Clay/Fabric/ Paper/Metal	**15 hrs**
Unit V	Presentation ideas to construction of fashion accessory: Collection for a party/ traditional wear	**15 hrs**
	Total Hours:	**75 hrs**

References:

Text Books:

1. **Alison Freer, (2018).** The Accessory Handbook: A Costume Designer's Secrets for Buying, Wearing and Caring for Accessories, Ten Speed Press, California.
2. **Elizabeth Galton, (2012).** Jewelry Design: From Fashion to Fine Jewelry, AVA Publishing, Singapore.
3. **Katherine Lester, Bess Viola Oerke, (2013).** Antiques and Collectibles – 2113, Courier Corporation,
4. **Robert Leach, (2012).** The Fashion Resource Book: Research for Design, Thames & Hudson.

Reference Books:

1. **Dorling Kindersley, (2012).** Fashion -The Ultimate Book of Costume and Style, Published by Dorling Kindersley Limited; London.
2. **Natalio Martin, (2013).** The Book of Fashion Accessories, Loft Publications, Barcelona.
3. **Pintu Pandit, Shakeel Ahmed, Kunal Singha, Sanjay Shrivastava, (2021).** Recycling from Waste in Fashion and Textiles: A Sustainable and Circular Economic Approach, John Wiley and Sons, USA.
4. **Steven Thomas Miller, (2012).** Drawing Fashion Accessories, Laurence King Publishing, London.

Course Outcomes:

- Describe various types of fashion accessories
- Sketch styles of fashion accessories
- Use appropriate materials to make fashion accessories
- Experiment the techniques for creating fashion accessories
- Investigate the possibilities of restyling garments into fashion accessories

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	3	-	-	-	-	-	-	-	-	-	-	2	-	2
CO 2	3	2	-	-	-	-	1	-	3	3	-	-	3	2
CO 3	-	-	-	2	-	-	-	-	3	3	3	-	3	-
CO 4	-	-	2	2	-	2	-	2	3	3	3	2	3	2
CO 5	-	2	2	2	-	2	-	2	3	3	3	2	2	2

Semester III **Textile Economics and Marketing** **Hrs of instruction/week: 4**
23MTFC14 **No of credits: 4**

Course Objectives:

- To understand the significant contribution and bottlenecks of the Indian textile industry.
- To gain knowledge about the organizational structure of textile industry and various TextileAssociations across the country

Unit I	**An overview of Indian textile Industry** – History, Evolution and Growth,Contributions of Textile Industry in Indian economy, Problems, drawbacks of the industry, National Textile Policy, **Globalization of Indian Economy***.	**10 hrs**
Unit II	**Various sectors of Textile Industry**- Overview of the organizational structure, Market size, export-import of cotton, silk, wool, jute, coir, Man- made, Readymade Garments, **Handloom and its importance***, advances made in Technical Textiles in Indian market, development and prospects.	**15 hrs**
Unit III	**Textile Associations and Organizations across the globe** – WTO, VAT, GATT, Research Associations, Technological and **Research Associations***- SITRA, NITRA, BITRA, AITRA, AJIRA, SASMIRA, SIMA, CMAI, NTC. Allocation and Utilization of Funds, TUF.	**10 hrs**
Unit IV	**Indian Textile Market** – Market size, Import –export of textile fibers, yarns and fabrics, handloom, power loom and readymade garments. Various Export promotioncouncils- PDEXCIL, CTEP, HEPC, HHEC, AEPC, ISEPC- functions, mission, its role in the development. **SWOT Analysis***.	**15 hrs**
Unit V	**Market Research**-Objectives, research design, forecasting-techniques- Trend analysis, Export procedures and incentives, **Problem procure in textile export***.	**10 hrs**

***Self Study**

Total Hours: 60 hrs

References:

Text books:

1. **Dudeja V. D., (2005).** Professional Management of Fashion Industry, Gagandeep Publications, Delhi.
2. **Nirupama Pundir, (2007).** Fashion Technology Today and Tomorrow, Mittal Publications,New Delhi.
3. **Manmeer Sodhia** and **Pooja Chately, (2003).** Fashion Marketing and Merchandising, Kalyani Publishers, New Delhi.
4. **Prashant P. Deshpande, (2009).** Garment Export Industry Of India , APH Publishing New Delhi.

Reference books:

1. **Dorling Kindersley, (2012).** Fashion, The Ultimate Book of Costume and Style, Publishedby Dorling Kindersley Limited; London.
2. **Mausumi Kar, (2015).** The Indian Textile and Clothing Industry-An Economic Analysis,Springer Publications, New Delhi.
3. **R.Nandagopalet al., (2004).** Textile and Clothing management, Allied Publishers. Pvt. Ltd, Delhi.
4. **S. Kasi and P. Balamurugan, (2016).** Liberalization and Indian Textile Industry, NewDelhi

Course Outcomes:

- Outline the growth development, market and problems of Indian textile industry
- Summarize the organizational structure of various Indian Textile sectors
- Identify the role of textile associations and organizations in the development of textile industry
- Explore the status and trends of Indian textile industries and their trade
- Acquiring knowledge on trends, trade and problems in the Textile industry

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO1	PSO2	PSO3
CO 1	1	-	-	-	-	-	-	-	2	1	-	1	-	-
CO 2	1	-	2	1	-	-	-	-	-	1	-	2	-	-
CO 3	1	-	-	-	1	-	-	-	-	-	-	2	1	-
CO 4	1	-	-	-	1	1	-	-	-	-	-	2	-	-
CO 5	-	-	2	-	-	-	-	1	2	-	-	-	1	-

Semester III **Clothing Standards and Specifications** **Hrs of instruction/week: 4**
23MTFC15 **No of credits: 4**

Objectives:

- To enable the students knowing the standards in quality clothing construction and their maintenance
- To develop the holistic understanding of Clothing standards and specifications

Unit I	**Clothing construction standards:** Standards in garment construction, seams, seam finishes, darts, dart equivalents, underlining, interfacing, interlinings, linings, inseam pockets, applied pockets, slashed pockets, bindings, facings, inset bands, rib-stretch Bands, Collars, Sleeves, sleeve finishes- cuffs and plackets, **Waistline edge treatments – waistbands, waistline facings, edge casings, internal waistline treatments***, button and decorative snap Closures, buttonholes, zippered Closures, hems and hems treatments. techniques of controlling fullness Knowledge of various components such as lace, braid, elastic, hook and loop fastening, Velcro, seam binding and tape, eyelets, zip fasteners, buttons, tack buttons, snap fasteners and rivets. Finishing of placket opening of upper and lower garment	**12 hrs**
Unit II	**Standards for fit-** Standards for good fit, Standard measurement techniques and its importance in fit, how to measure Garments, Minimum ease for each part, Standard measurement for hemline for various garments, collar, button stand, button holes, piping, facings, etc., **Trims Testing-Possible defects-zippers, buttons***	**12 hrs**
Unit III	**Quality Standards** - Definition of a standard, benefits of standards, levels of standards, need for uniform standards, Standards for different levels, quality standard and price relationship, national, company, industry, international, **standardizing bodies, AATCC, ASTM, ANSI, ISO, BSI, BIS*.** Quality Control Inspection, Quality control of finished garments, Quality control and Government contacts. Quality Control for Packaging, Warehousing and shipping. Statistical Quality Control, Fabric stiffness, Drape ability, Wrinkle recovery, Water repellency, Fabric shrinkage testing, Fabric abrasion resistance, Fabric pilling resistance. Quality assessment of garments – cutting, sewing, pressing, finishing and pack ageing defects	**12 hrs**
Unit IV	**Specifications** -Importance of Specs and its role in maintaining quality, Process of spec sheet development, **Concept of Tolerances - Maximum, minimum, zero tolerance*.** Fabric inspection, classification of fabric defects, independent product quality certification, MIL standards.	**12 hrs**
Unit V	**Care labelling** -Importance of care labels, Care symbols and variations in different countries - Ginetex, **Japanese***, American, European, Canadian- Symbols, Meanings, Care instructions for different fabrics and garment types. Care labels – Washing, Bleaching, Drying, Ironing and different placements of label in garments. Performance of Indian Garment Export, SWOT Analysis Setting up of garment unit for export market, Export Document, Export finance- Payment method, Export shipping	**12 hrs**

***Self Study** **Total Hours: 60 hrs**

References:

Text Books:

1. **Alsion Smith., (2009).** The Sewing Book, D.K Publishers.
2. **Pradip Mehta &S.K.Bhardwaj, (2011).** Managing quality in apparel industry', New age Publishers.
3. **R.Senthilkumar, (2016).** Care labeling in Garments, Createspace Independent Pub.
4. **Sara J. Kadolph., (2007).** Quality Assurance for Textiles and Apparel, Fairchild Publications.

Reference books:

1. **Claire Shaeffer, (2001).** Sewing for Apparel Industry, Prentice Hall Publishers
2. **Elliot Brown Grover, Dame Scott Hamby, (2007).** Handbook of textile testing and quality control, Textile Book Publishers.
3. **Janace E. Bubonia, (2014).** Apparel Quality: A Guide to Evaluating Sewn Products, Fairchild Publications.
4. **Subrata Das, (2020).** Quality Characterisation of apparel, Woodhead publishing India in Textiles, Second Edition.

Course Outcomes:

- Understand the standards available for textile materials
- Evaluate the constructional parameters of fabrics
- Analyses the principle of measurement systems for fabric characteristics
- Determine the correct procedure for quality evaluation of fabric and understand the evaluation of garment quality
- Interpret care labeling system for various fabrics and garments

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	2	-	-	1	1	-	-	-	-	-	1	-	2	-
CO 2	2	-	1	1	1	1	-	-	-	-	-	1	-	-
CO 3	1	-	-	2	-	1	-	-	1	1	-	1	1	1
CO 4	1	-	-	1	-	1	-	-	-	1	1	-	2	1
CO 5	1	-	-	-	-	1	-	-	-	-	-	-	1	-

Semester III	**Fashion Presentation**	**Hrs of instruction/week: 4**
23MTFC16	**(Open Book Test)**	**No of credits: 3**

Course Objectives:

- To enable students understand the concept of visual presentations
- To develop skills in fashion presentation and to enable students to express effectively.

Unit I **Fashion Market** Introduction to Fashion Industry, Indian and Global Fashion Market, market segments, Levels of fashion industry- couture, ready to wear, mass production. Organizational set-up of fashion industry, **fashion industry***- departments and their functioning. **10 hrs**

Unit II **Retail Fashion Promotion** Purpose, promotion levels, promotion planning program – action, allocating budget, promotion ethics, Fashion Promotion - Marketing Channels, Planning and Direction, Retail Advertising, Publilicity, Special Events, **Visual merchandise***, Personal Selling and Relationship Marketing **15 hrs**

Unit III **Visual Merchandising** Importance, Store interior, Window displays, Display Techniques, Mannequin draping and decorative displays. Colour, Lighting – Light planning and Types. Fixtures – Retail and Apparel Fixtures. Store exterior, **display settings***. **10 hrs**

Unit IV **Inspirational designing and presentation** Introduction - Design studio -designing based on different themes, Catalogues and Brochures, Fashion photography, Exhibit and Trade show Display, Industrial Display, **Digital portfolio*.** **15 hrs**

Unit V **Fashion Shows** Fashion forecasting Purpose, types of fashion shows, **plan, Coordination***, merchandising models, coordinating physical layout, music choreography and commentary, promoting and presenting the show, Rehearsals and show time follow up. **10 hrs**

***Self Study** **Total Hours: 60 hrs**

References:

Text Books:

1. **Dimitri Koumbis, (2020).** Fashion Retailing: From Managing to Merchandising, Bloomsbury Publishing, New Delhi.
2. **Sumathi, G.J. (2004).** Elements of Fashion and Apparel Design, New Age International Limited, Mumbai.
3. **Swathi Bhalla and Anuraag.S, (2010).** Visual merchandising, Tata McGraw Hill Education Pvt. Ltd., New Delhi.
4. **Stark, G., (2018).** The Fashion Show: History, Theory and Practice, Bloomsbury Publishing, United Kingdom.

Reference books:

1. **Navneet Kaur, (2010).** Comdex fashion design, Vol III, Designing and showcasing a fashion collection, Dream Tech Press, New Delhi
2. **Gini Stephens Frings, (2007).** Fashion from Concept to Consumer, Prentice hall, Publications
3. **Dorling Kindersley Fashion, (2012).** The Ultimate Book of Costume and Style, Dorling Kindersley Limited; London.
4. **Halliday, R., (2022).** The Fashion Show Goes Live: Exclusive and Mediatized Performance, Bloomsbury Publishing, United Kingdom.

Course Outcomes:

- Explain the structure of Indian and global fashion market
- Categorize fashion promotion programmes based on various market strategies
- Classify and assess the visual merchandising methods for fashion sectors
- Criticize the purpose of fashion shows and fashion forecasting
- Analyze the fashion presentation methods for effective fashion marketing

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	-	-	2	-	-	2	2	2	-	-	-	3	3	3
CO 2	-	2	-	-	-	1	1	2	1	3	-	1	1	1
CO 3	1	1	-	-	-	2	1	1	1	2	-	2	3	1
CO 4	1	2	1	1	-	2	-	1	1	2	2	2	3	1
CO 5	1	1	-	1	-	2	1	1	1	2	2	2	3	1

Semester III **Nonwoven Technology** **Hrs of instruction/week: 4**
23MTFC17 **No of credits: 4**

Course Objectives:

- To enable students to gain knowledge about nonwoven production
- To study the properties and application of nonwovens

Unit I **Nonwoven Fibre Preparation and Web formation** **10 hrs**

Nonwovens - Introduction and Definitions, Elements of nonwovens, Fibre geometry, Structure of fibrous webs, **Basic nonwoven processes and their sequences* Fibre Preparation** - Processes of raw materials- Fibre preparation, mixing and Carding process, Parallel-lay process, cross-lay process, perpendicular-lay process, air-lay process and **Wet-lay process***

Unit II **Bonding Processes** **15 hrs**

Mechanical bonding - needle punch process and hydro entanglement process.
Thermal bonding - Principles of thermal bonding, calendar bonding process, Through-air bonding process, Infra-red bonding process, Ultrasonic bonding process. Chemical bonding - chemical binders and methods of binder applications. Saturation bonding - foam bonding, spray bonding and print bonding process, Methods of drying. Polymer-**Extrusion Based Technologies*** - Raw Material and process sequence in Spun-bond technology and Melt-blown technology.

Unit III **Finishing of Nonwovens** **15 hrs**

Mechanical finishing- Splitting and winding, Perforating, Drying, Compressive finishing, Calendering, Singeing, Shearing, Flocking, Raising, Sueding, Polishing, Softening, Heat setting. Chemical Finishing –Types; Antistatic agent, Antimicrobial finishes, Lubricants, Flame proof finishes, Water proof finishes, Softeners, Stiffeners, UV stabilizers. Methods – Dyeing, Printing, Padding, Coating, Lamination, Unconventional finishing - Ultrasonic welding, Plasma, Microencapsulation.

Unit IV **Composites** **10 hrs**

Material Science - Definition, history, fundamentals, classification, bio materials; Composites – Definition, Need for Composites, Properties of Composites, Constituents of Composites; Classification of composites - based on the type of matrix material- polymer-matrix composites, metal-matrix composites and Ceramic-matrix Composites; based on the type of Reinforcement - Fiber Reinforced Composites, Particulate Composites and Structural Composites; Advantages of Composites, Limitations of Composites; Manufacturing Processes of Composites - Open Molding, Closed Molding and Cast Polymer Molding. **Hybrid composites***

Unit V **Evaluation and Application** **10 hrs**

Composites Evaluation - Tensile properties, Compressive properties, TGA, FTIR, Hardness, Impact, Liquid absorbency, Mass, Volume and Density; **Nonwoven Evaluation** - Mechanical properties - Tensile strength, Tear Strength of Fabrics, Bursting Strength of Fabrics , Abrasion, Air permeability, Stiffness; Wetting and liquid absorption. **Applications of Composites** - Aerospace Industry, Automotive Industry, Marine Industry, Construction and Sports Equipment. **Applications of Nonwoven***

Total Hours: 60 hrs

***Self Study**

References:

Text books:

1. **Russell S.J. (Ed.), (2022).** Handbook of Nonwovens, 2nd Edition, Woodhead Publishing, CRC Press, Washington.
2. **Albrecht W. H. Fuchs and W.Kettelmann, (2003).** Nonwoven Fabrics: Raw Materials, Manufacture, Applications,Characteristics, Testing Process, Wiley-VCH, Verlag GmbH & Co. KGaA, Weinheim, Germany.
3. **Karthik.T,, PrabaKaran.C, and Rathinamoorthy.R, (2017).** Nonwovens: Process, Structure, Properties and Applications, Woodhead Publishing India in Textiles, New Delhi.
4. **Batra, S. K., Pourdeyhimi, B., (2012).** Introduction to Nonwovens Technology, Destech Publications, United States.

Reference books:

1. **Callister, Jr., Rethwisch, (2009).** Materials Science and Engineering – An Introduction, (8th ed.). John Wiley and Sons, USA.
2. **R.A. Chapman, (2010).** Applications of Non Woven in Technical Textiles, CRC Press Boca Raton Boston, New York Washington D.C, Wood Head Publishing Limited , Cambridge England.
3. **Irwin M. Hutten, (2007).** Handbook of Nonwoven Filter Media, Butterworth-Heinemann/IChemE series, Chemical, Petrochemical & Process, Elsevier USA.
4. **George Kellie, (2016).** Advances in Technical Nonwovens. Elsevier Science. Netherlands.

Course Outcomes:

- Explain the elements and concepts of non-woven preparation process.
- Identify suitable fibers preparation and laying processes in non-woven production.
- Classify and compare types of non-woven technology for specify end uses.
- Categorize the end applications of non-woven products based on the production processes and finishing techniques.
- Exploit and create non-woven product with eco-friendly materials/ finishing sources and understand their evaluation methods.

Semester III	Advanced Fashion Apparel Designing	Hrs of instruction/week: 6
23MTFC18	(Practical)	No of credits: 4

Course Objectives:

- To enable the students to design and draft patterns for different apparels
- To facilitate the students to handle different fabrics and develop fashion apparels based upon theme/events.

Designing, drafting and Construction of apparel for

Unit I	• **Girls wear** Lehenga Choli - skirt and blouse Palazzo Pant and Crop Top	**15 hrs**
Unit II	• **Boys wear** Casual shirt Shorts (Any style)	**20 hrs**
Unit III	• **Men's Wear** Bush shirt Double breasted coat Pleated Pant	**20 hrs**
Unit IV	• **Women's wear** Party Wear – Churidar and Kurta Princess blouse	**20 hrs**
Unit V	• **Persons with special needs** Lactation /Maternity dress Physically challenged/ Figure irregularities(Any One Style)	**15 hrs**
	Total Hours:	**90 hrs**

References:

Text Books:

1. **Armstrong, Helen Joseph, (2014).** Pattern making for Fashion Design, Pearson Publisher, India.
2. **Matthews-Fairbanks J.L, (2018).** Pattern Design: Fundamentals: Construction and Pattern Drafting for Fashion Design, Fairbanks Publishing LLC, United States.
3. **W. H. Hulme (2011).** The Theory of Garment-Pattern Making - A Textbook for Clothing Designers Teachers of Clothing Technology and Senior Students, Publisher: Read Books
4. **Zarapkar, K.R., (2010).** System of cutting- Navneet Publication, Zarapkar Tailoring College, Bombay

Reference books:

1. **Glock, R. E., Kunz, G. I. (2005).** Apparel Manufacturing: Sewn Product Analysis, Pearson Education, India.
2. **M. Dolores Quinn, Renée Weiss Chase, (2002).** Design Without Limits: Designing and Sewing for Special Needs, Publisher: Fairchild Books.
3. **Mors de Castro, L., Sánchez Hernández, I., (2015).** Practical Pattern Making: A Step-by-step Guide, Firefly Books, United States.
4. **Rebecca Cunningham, (2011).** Basic Sewing for Costume Construction: A Handbook, Second Edition, Waveland Press, New York.

Course Outcomes:

- Demonstrate the pattern making techniques and construct theme based apparels
- Choose and create styles for seasonal/ occasional wear apparels
- Utilize appropriate fabrics for different apparels styles
- Select and construct suitable apparels for different age groups
- Design and develop fashion apparels for persons with special needs and irregular figures

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	1	2	3	-	-	-	-	-	2	3	3	1	3	-
CO 2	1	2	2	-	-	-	-	-	2	2	3	3	2	-
CO 3	2	3	3	-	-	-	-	-	3	2	2	2	3	-
CO 4	1	2	2	-	-	-	-	-	2	3	3	2	3	-
CO 5	2	3	2	-	-	-	-	-	3	2	2	3	2	-

Semester III	**CAD for Fashion Apparel**	**Hrs of instruction/week: 5**
23MTFC19	**(Practical)**	**No of credits: 3**

Course Objectives:

- To enable students, gain knowledge in computers aided designing.
- To understand the tools of Adobe Photoshop and its application for apparel designing

Unit I	**Adobe Photoshop** –Tools and their application, editing tools, image editing, cropping, resizing, working with layers, blend, filters and group. Designing motifs – Traditional, abstract and geometric designs: pallu design and border designs. **Business essentials:** Logo creating, pamphlet creation, letter head, visiting card creation for a store / company.	**15 hrs**
Unit II	**Adobe Illustrator** – Fashion silhouette sketching, drawing 9 ½" Male and Female Croquis using software. Fashionable poses, Illustration of Face, Illustration of Accessories: Necklace and earring, bag, and footwear.	**20 hrs**
Unit III	**Textile designing**–Design development for Printing- Print repeats, All over design, Straight, cross, drop, half drop, diamond, mirror, and brick repeats. Design for different weaves – plain, rib, twill and dobby. Creating patterns for sarees and dupattas.	**15 hrs**
Unit IV	**Designing Kids apparel:** Girl and boy – Ethnic / Casual wear. **Technical sketch** – garment construction details, point of measure. Package designing – Trims, designing main tag, care label.	**10 hrs**
Unit V	**Fashion portfolio preparation** - Selection of a theme and developing – Inspiration/ theme board, mood board, story board, accessory board, Pantone color board, flat sketches and final portfolio presentation, Techpack preparation based on seasons/ occasion for women/men.	**15 hrs**
	Total Hours:	**75 hrs**

References:

Text books:

1. **Bittu Kumar, (2015).** Adobe Photoshop, V and S Publishers, Mumbai.
2. **Hume, R., (2020).** Fashion and Textile Design with Photoshop and Illustrator: Professional Creative Practice, Bloomsbury Publishing, United Kingdom
3. **Jenny Udale, (2008).** Basics Fashion Design Textiles and Fashion, Bloomsbury Publishing India Private Limited.

4. **Kevin Tallon, (2008).** Digital Fashion Illustration: With Photoshop and Illustrator, Batsford Ltd.

Reference books:

1. **Calvin Wong, (2017).** Applications of Computer Vision in Fashion and Textiles, Woodhead Publishing Series, UK.
2. **Marianne Centner and Frances Vereker, (2011).** Fashion Designers' Handbook for Adobe Illustration, Wiley and Sons Ltd. Publications, U.K.
3. **Smith, S. S., (2015).** CAD for Fashion Design and Merchandising: Bundle Book + Studio Access Card, Bloomsbury Academic, United States.
4. **Susan Lazean, (2012).** Adobe Illustrator for Fashion Design, Prentice Hall

Course Outcomes:

- Learn to choose various tools for computer aided textile/ apparel designing
- Make use of different tools to draw croquis, patterns styles and for fashion portfolio preparation
- Utilize software's for textile and apparel designing
- Design and create computer aided thematic textile designs and apparel styles for different age groups
- Develop digital portfolios with various fabrics, styles for textile fashion apparels and accessories

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	2	2	2	-	-	2	3	-	2	2	-	1	3	1
CO 2	2	2	-	-	-	2	3	-	1	2	-	2	3	1
CO 3	2	2	3	-	1	2	2	-	1	2	3	1	2	2
CO 4	2	1	2	-	1	2	3	-	2	2	-	2	2	1
CO 5	2	3	2	1	-	2	2	-	2	2	1	2	3	2

Semester III	**Fashion Draping**	**Hrs of instruction/week: 1**
23MTFC20	**(Self Study)**	**No of credits: 4**

Course Objectives:

- To understand the concept of draping
- To develop skills in draping various garment details and styles

Unit I **Principles of Draping** **3 hrs**

Introduction, Preparation of Dress Form, Terminologies in draping and measuring, , Fabric Selection and muslin block preparation process- GSM, bias, selvedge, grain line, pattern, texture and muslin mocks.

Unit II **Draping Bodice Variations** **3 hrs**

Types of Draping – Knotting, Pleating & Free style. Draping basic front and back. One-piece, two-piece and kimono bodices. Dart Variations, Armhole variations, Waistline variations.

Unit III **Draping Sleeves, Collars and Necklines** **3 hrs**

Sleeves - Set-in, raglan, and dolman sleeves. Sleeves for Cap-shoulder and drop-shoulder bodices, Flared lower sleeve, cuff. **Collars** – Rolled collars with straight back. Bias rolled collars. Flat collars with straight back. Shawl and cape collar with straight back. Flat collars with straight front. Irregular collars. **Necklines:** Scoop neck, bateau neck, illusion neck and asymmetric neck.

Unit IV **Draping Skirts and Pants** – Two-piece skirt with straight centre front and back. Two-piece flared skirt. One-piece wrap around skirt. Bias circular skirt. **Pants**– harem pant, baggy pants, punk pants, jumpsuits. **3 hrs**

Unit V **Draping Sarees** – Traditional & Contemporary styles **3 hrs**

Traditional - Traditional- Atpoure, Nauvari, Seedha pallu, Mekhela chadar, pinkosu, Madisar, Kappular, Gol saree, Halakki Vokkaliga, Coorgi style, Kunbi. **Contemporary** - Draping styles with pant, Dhoti style, Lehanga choli, saree wearing with kurta/ top, Jacket.

Total Hours: 15 hrs

References:

Text Books:

1. **Helen Joseph Armstrong, (2008).** Draping for Apparel Design, Second Edition, Fair child publication, Inc, New York,
2. **Hilde Jaffe and Nurie Relis, (2009).** Draping for Fashion Design, Pearson Education Inc, Dorling Kindersley Pvt. Ltd, New Delhi.
3. **Jaffe (2012),** Draping fashion Design, Sonali Publication, New Delhi.
4. **Jen Jones, (2007).** Fashion Design - The Art of Style, Capstone Press, Mankato, Minnesota.

Reference books:

1. **Amaden-Crawford, C., (2018).** The Art of Fashion Draping, Bloomsbury Academic, United States.
2. **Karolyn.Kiisel, (2013).** Draping: The complete course, Laurence king Publishing, United Kingdom.
3. **Khurana K., (2012).** Draping and Pattern Making for Fashion Design, Sonali Publications, New Delhi.
4. **Parker, T., (2021).** Draping for Fashion Design, Crowood Press, United Kingdom.

Course Outcomes:

- Outline the concepts of fashion through draping for apparel designing
- Apply draping skills in designing garment details
- Analyze the drape details in garment's application
- Justify the application of fabrics suitable for draping
- Design and Develop new styles of garments through draping

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO 1	3	3	3	-	-	2	-	-	3	3	3	-	3	-
CO 2	2	2	3	1	-	3	1	-	3	2	2	-	2	-
CO 3	3	2	2	2	-	2	-	-	2	2	2	-	1	-
CO 4	1	-	1	1	-	-	-	-	1	1	1	1	1	-
CO 5	1	-	2	2	-	-	-	-	-	1	-	1	2	1