

MAHARSHI DAYANAND UNIVERSITY, ROHTAK
SCHEME OF STUDIES AND EXAMINATION
B.TECH (FASHION & APPAREL ENGG) SEMESTER-VI
'F' Scheme w.e.f 2011-12

Course No.	Course Title	Teaching Schedule				Marks of Classes	Examination		Total Marks	Duration of Exam
		L	T	P	Total		Theor	Practical		
TC-302-F	Dyeing of Textiles	3	1	-	4	50	100	-	150	3
TT-304-F	Textile & Garment Testing	3	1	-	4	50	100	-	150	3
FA-306-F	Garment Production Machines & Equipment	3	1	-	4	50	100	-	150	3
FA-308-F	Knitted Garment Technology	3	1	-	4	50	100	-	150	3
FA-310-F	Apparel Marketing & Merchandising	3	1	-	4	50	100	-	150	3
TT-312-F	Structure & Properties of Textiles	3	1	-	4	50	100	-	150	3
	Practicals									
TC-314-F	Dyeing & Computer Color Matching Lab	-	-	2	2	50	-	50	100	4
TT-316-F	Textile & Garment Testing Lab	-	-	3	3	50	-	50	100	4
FA-318-F	Apparel Design Lab	-	-	2	2	50	-	50	100	4
FA-320-F	Apparel Construction Lab-II	-	-	3	3	50	-	50	100	4
Total		18	6	10	34	500	600	200	1300	

TC-302-F DYEING OF TEXTILES (COMMON WITH TC)

L T P
3 1 -

Class work : 50
Examination : 100
Total : 150
Exam duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

Unit I

General methods of dyeing. Important classes of dyes. e.g. direct, acid, basic, vat, azoic, sulphur, reactive and disperse dyes etc., Application of dyes on natural, regenerated (Viscose, Polynosic, modal, Loycell) fibres

Unit II

Application of dyes on Man Made fibres (Polyester, Nylon, Acrylic and etc.), yarns, fabrics and garments.

Unit III

Chemical auxiliaries used in dyeing. Colour measurement and fastness (light, washing, perspiration, sublimation, chlorine, etc.) properties.

Unit IV

Dyeing of blends, P/C, P/W, P/V etc. Mass colouration. Pigment dyeing. Dyeing of denim using Indigo dye, Pigment dyeing technology, factors affecting dyes build-up on cellulosic material, continuous Indigo dyeing range, new Indigo vetting and dyeing techniques. Rectifying and Stripping of dyes from substrate,

Reading List

Title	Author
Technology of Dyeing	V A Shenai
Dyeing and Chemical Technology of Textile Fibres	E R Trotman
A glimpse of the Chemical Technology of Textile Fibres.	R R Chakraverty

TT-304-F TEXTILE & GARMENT TESTING

L T P
3 1 -

Class work : 50
Examination : 100
Total : 150
Exam duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

Unit I

Introduction to testing and its importance, Standard atmospheric conditions for testing and its effect on test results. Testing of yarn strength, elongation, twist, evenness and hairiness. Fabric dimensions measurement – length, width, thickness, weight/area, thread/length, and crimp.

Unit II

Tensile strength and elongation: Definition of different units, tensile strength and elongation, work of rupture, tearing strength, bursting strength. Serviceability: Snagging test, Pilling test, Abrasion resistance.

Unit III

Comfort: Water vapor repellency, Wicking properties, Air permeability, Thermal insulation and wettability. Fabric handle: Bending length, Crease recovery, Drape, Low stress mechanical properties. FAST, Kawabatta Evaluation System.

Unit IV

Garment Testing: Dimensions, Seam strength, Seam slippage, Adhesion between interlining and fabric, shrinkage, zippers, buttons, snap fasteners and other general garment properties . Needle Cutting/Yarn severance.

Reading list

Title	Author
Principles of Textile testing	J.E Booth
Textile Testing	V.K. Kothari
Apparel quality Control	V.K. Mehta
Physical Testing of Textile	Saville

FA-306-F GARMENT PRODUCTION MACHINES & EQUIPMENT

L	T	P	Class work	:	50
3	1	-	Examination	:	100
			Total	:	150
			Exam duration:		3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

Unit I

Overview of the Garment Manufacturing processes, Introduction to the latest advancements in the Garment manufacturing processes.

Fabric cutting Process: Pre-requisites for the fabric cutting. Tools and equipment needed for the cutting process. Advancements in the fabric cutting technology.

Unit II

Garment assembly processes: Basics of sewing, Functional parts of sewing machines (SNLS): Feed mechanisms, Run-in-ratio, Effect of sewing process on the sewing thread strength.

Principle, mechanism and utility of following machines: Interlock machine, Overlock machine, Double needle Lock stitch and chain stitch sewing machines, Bar-tacking machine, Feed off the arm, Button attaching and buttonhole making machine and computerized embroidery machines.

Unit III

Study of sewing needle temperature: Factors affecting and remedial measures, Methods for the needle temperature measurement.

Study of the measurement of the sewing forces and pressure during sewing.

Study of the measurement techniques of the sewing thread tension on the sewing machine: SNLS and overlock machines.

Applications of Programmable logic circuits (PLC) in the Garment manufacturing processes.

Robotics: Basic analogy, its applications, scope and limitations in the Garment Industry.

Unit IV

Pressing and Fusing process and equipment. Handling of garments between different processes in the apparel industry. .

Reading list

Title	Author
Knitted Clothing Technology	Brackenburry
The Technology of Clothing Manufacture	Harold Carr, Barbara Latham
Introduction to Clothing Manufacture	Gerry Cooklin
Apparel Production	Jacob Solinger
Robotics & Automation in the Textile Industry	M.G.Mahadevan
Fashion Production Terms	Debbie Ann Giocello & Berle

FA-308-F KNITTED GARMENT TECHNOLOGY

L T P
3 1 -

Class work : 50
Examination : 100
Total : 150
Exam duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

Unit I

Introduction to Knitted Garments- types and flowchart including the steps of production. Fully Cut garments – spreading – hand and machine spreading, types of lays. Marking – manual and computerized marking Cutting devices as die-cutter. Hand shears, laser cutting, etc. Cut stitch shaped – Fitting blocks as easy fitting and close fitting blocks. Consideration of visual stretch, stretch in action, etc. Shaping of various garments, e.g., in body sleeve angles, etc., Cutting in case of cut stitch shaped garments.

Unit II

Fully fashioned garments – Concepts of use of basic forms i.e., circle, bell, and balloon, triangle, overlays in the generation of a garment shape. Broader classification of integral garments. Fashioning for shaping, fashion frequency. Most commonly used fashion details- Necklines, sleeves, etc.

Unit III

Integral garments – Basic techniques as course shaping Wales shaping, tubular knitting, running-on, change of stitch type, casting -off, etc.

Machine knitted integral garments as berets,, half hose, upper and lower bodice garments as Jacket, Wagnall garment, Tubular garment, etc.

Unit IV

Different types of stitches, Commonly used stitch in knitted garment assembly as single, double, three thread, lock stitch and covering stitch. Run-in ratios and application of each in Linking and Mock Linking. Linking machine and Cup seamer. Quality control of knitted garments.

Reading list

Title

Author

Knitting Technology	Spencer
Knitting Clothing Technology	Brackenbury
Fabric form and flat cutting	Winfred Aldrich

FA-310-F APPAREL MARKETING & MERCHANDISING

L	T	P	Class work	:	50
3	1	-	Examination	:	100
			Total	:	150
			Exam duration:		3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

Unit I

Exploration of Fashion Industry, Marketing and Careers within the industry, Core components, Primary markets, Producers of material, Secondary markets, Design and Production, Present scenario of Textile and Apparel industry in India. Fashion Marketing concept, Marketing environment.

Unit II

Domestic Vs International Marketing, Challenges for International Marketing, International Marketing environment, Identifying foreign apparel markets, International marketing mix – PLC model, Pricing decision, Channels of distribution, Promotion mix in International context, Modes of entering foreign market for apparel exports, Merits and demerits of each method, Terms of payment

Unit III

Exports- Export procedure and documentation, Export assistance – various schemes, sources of information, export promotion council etc., export finance,

Unit IV

Export houses- working of export houses, categories- star trading export houses, etc. Outsourcing merchandising, visual merchandising, Business process off shoring/outsourcing. Concept of supply chain management. India's leading export houses, Trends in apparel industry, Foreign trade agreements related to the garment industry

Reading List

Title	Author
International Marketing Management	Varshney and Bhattacharya
Nabhi's publication on Export	Govt. Handbook
International Marketing	Onkvisit and Shaw
International Marketing	Cateora

TT-312-F STRUCTURE AND PROPERTIES OF FIBRES

L T P
3 1 -

Class work : 50
Examination : 100
Total : 150
Exam duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

Unit I

Structure and Properties of Ring, Rotor, DREF spun yarns, multifilament and textured yarns. Importance of Yarn structure in relation to different mechanical properties of Apparel Fabrics. Cloth setting theories: Ashenurst's, Armitage's, Law's, Brierley's and Peirce's theory: its basic seven equations and idea of jamming.

Unit II

Tensile property of fabrics: tensile curve for fabrics and geometrical changes during tensile deformation, factors affecting tensile strength of fabrics, Bending property of fabrics: Different bending stiffness parameters by cantilever testing, Bending hysteresis testing and different parameters measured by it, Bending hysteresis curve, Factors affecting bending stiffness of fabrics

Unit III

Shear stiffness of fabrics: problems during shear testing and their remedies. Shear hysteresis curve, Spring- friction block model of shear behaviour. Creasing of fabrics: Mechanism of creasing, different motions within fabric structure while creasing. Factor affecting crease resistance and crease recovery of fabrics.

Unit IV

Comfort of fabrics, different constituents of comfort. Flow of heat, moisture and air through textile material, Factors affecting thermal insulation, moisture propagation and air permeability of fabrics. Drapability of fabrics, Drape testing, drape parameters and factors affecting drape behaviour. Introduction to the term Tailorability and Formability for apparel fabrics. Handle of fabrics. Objective evaluation of fabric handle. Constituent properties of handle.

Reading List

Title	Author
Textile Yarns-Technology, Structure and Applications	Goswami etal
Structural Mechanics of Fibres, Yarns and Fabrics	Hearle etal

TC-314-F DYEING AND COMPUTER COLOUR MATCHING LAB

L	T	P	Class work	:	50
-	-	2	Examination	:	50
			Total	:	100
			Exam duration:		4 hrs

Dyeing of Cotton, Rayon, and Flax by direct, reactive, sulfur, vat, azoic dyes. Dyeing of Wool and Silk by acid, metal complex dyes, Nylon with acid dyes, Carrier, HTHP, Thermosoling dyeing of PET, Dyeing of Acrylic with basic dyes, Dyeing of Cotton/Polyester and Polyester/Viscose blend. After treatment of direct dyes, Rectification and Stripping of dyes. Tie-dyeing. Identification of dyes on substrate. Measurement of fastness properties, Perspiration, light, washing, rubbing, etc. Computer colour matching, Familiarization with the principles and working of computer color matching instrument, Making of database of dyes, shade matching, shade correction, colour difference, measurement, shade sorting.

TT-316-F TEXTILE AND GARMENT TESTING

L	T	P	Class work	:	50
-	-	3	Examination	:	50
			Total	:	100
			Exam duration:		4 hrs

Testing of single yarn strength, elongation, CSP, yarn twist and evenness
Testing of fabric tensile strength, elongation, air-permeability, bending stiffness, tear strength, crease recovery, abrasion resistance, pilling resistance, Drape.
Testing of seam strength, seam slippage and other general garment properties

FA-318-F APPAREL DESIGN LAB

L	T	P	Class work	:	50
-	-	2	Examination	:	50
			Total	:	100
			Exam duration:		4 hrs

Principle of dart manipulation by (i) Slash and spread method (ii) Pivotal transfer method
Style variations of dart manipulation – pleats, tucks, gathers, dart clusters, radiating darts, terminating darts
Commercial paper patterns- symbols used in commercial patterns, envelopes for commercial paper patterns, guide sheet and other relevant information

FA-320-F APPAREL CONSTRUCTION LAB -II

L	T	P
-	-	3

Class work	:	50
Examination	:	50
Total	:	100
Exam duration:		4 hrs

Flat pattern technique- drafting, developing pattern, designing and construction of garments of children, men and women using different construction and decorative features. Handling of different types of fabrics in the above garments.

Analysis of different garments- Men's wear, women's wear, kid's wear

Different parts of a garment , different operational stitch of a garment, Line balancing system, SAM calculation, Layout setting procedure.