UTTAR PRADESH TECHNICAL UNIVERSITY
LUCKNOW

SYLLABUS

Bachelor of Carpet & Textile Technology

3rd Year (V & VI Semester)
(Effective from Session 2015-2016)

Study and Evaluation Scheme: Bachelor of Carpet & Textile Technology

Year: 3rd , Semester-V

Sr No.	Course code	Subject	Period			Evaluation scheme				Subject total	Credit
			L	T	P	Sessional Exam			ESE		
						CT	TA	Total			
THEORY SUBJECTS											
1	NCT-501	Textile Testing I	3	1	0	30	20	50	100	150	4
2	NCT-502	Textile Chemistry II	3	1	0	30	20	50	100	150	4
3	NCT-503	Carpet Yarn Technology	3	1	0	30	20	50	100	150	4
5	NCT-504	Fabric manufacture III	3	1	0	30	20	50	100	150	4
5	NCT-505	Fibre Science	2	1	0	15	10	25	50	75	3
6	NHU-501	Engineering Economics	2	0	0	15	10	25	50	75	2
PRACTICAL/ DESIGN/ DRAWING											
8	NCT-551	Yarn manufacture lab III	0	0	3	10	10	20	30	50	1
9	NCT-552	Fabric manufacture Lab III	0	0	3	10	10	20	30	50	1
10	NCT-553	Textile Testing lab I	0	0	2	10	10	20	30	50	1
11	NCT-554	Textile chemistry lab II	0	0	2	10	10	20	30	50	1
12	NGP 501	General proficiency	-	-	-	-	-	50	-	50	
		Total	16	05	10	-			-	1000	25

NCT-501 Textile Testing I L:T:P::3:1:0

UNIT – I **[8]**

Objectives of Testing, selection of samples for testing, Random and biased sampling, Principles of sampling for fibre/yarn/fabric testing. Effect of moisture on different fibre properties; moisture content & regain; measurement of atmospheric conditions, Brief description and working principle of moisture meter.

UNIT – II **[8]**

Fibre Length: measurement of fibre length and variation. Concept of span length and determination of 2.5% and 50% span length. Concept of Baer Sorter Diagram.

UNIT – III **[8]**

Fibre Fineness: various methods of determination of fibre fineness – air flow method.
Strength: definitions; stress strain diagram of different fibres. Principle & brief description of modern fibre testing equipments like- H.V.I., AFIS, OFDA, WIRA FDM, Laser Scan, etc.
F.Q.I. and its technical significance,
Fibre maturity: methods of determination of fibre maturity. Determination of medullation % of wool.

UNIT – IV **[8]**

Yarn Fault Testing: Classification of Yarn Faults and yarn classifying systems .
Yarn Hairiness: Causes and its measurement.
Yarn Twist: Definition of Twist & its measurement, level of twist

UNIT – V **[8]**

Evenness Testing (Sliver, Rove & Yarn)
Type of irregularity and its expression;Index of irregularity; limit irregularity; addition of irregularities, variation between & within samples; B(L) & V(L) curves;
Measurement of short term and long term variation of Sliver, Rove & Yarn. Short term variation (U%): Principles of measurement of u% of textile fibre strand, thick place, thin place & neps: Causes and effect of yarn irregularity: nature of irregularity; periodic irregularity, random irregularity. Interpretation of Evenness diagram and spectrogram to detect source of fault.

References:

1. Principles of Textile Testing by J. E. Booth
2. Physical Testing of Textiles by Saville
3. Handbook of Textile Testing & Quality Control by Grover & Hamby
4. Physical Testing & Quality Control by K. Slater (Textile Institute)
5. Testing & Quality Management by V. K. Kothari

NCT-502 Textile chemistry II L:T:P::3:1:0

UNIT – I **[8]**

Wet Processing of Wool Carpet Yarn: Yarn scouring (Principles and practices), Chemical setting (Principal, technologies and correlation with carpet properties).
Mercerisation: Mercerisation, Process parameters, methods of mercerization, mercerization machineries, changes in physical properties of fibres, Barium Activity number

UNIT II **[8]**

Azoic Colour: Basic principle of application of Azoic Colour; Naphtholation process, role of additives and effect of process parameters on naphtholation process. Classification of naphthols based on substantivity. Basic chemistry in Diazotisation process, Procedure for diazotisation; Stabilization of diazonism salt. Development of Shades- Coupling, Basic Chemistry involved in coupling.Fastness properties of Azoic Colours.

Sulphur Dyes: Chemical nature of sulphur dyes; Classification of sulphur dyes, Process of application of sulphur dyes & mechanism of dyeing, Role of additives and process parameters in sulphur dyeing. Fastness properties of sulphur dyes.

UNIT III **[8]**

Vat Dyes: General formula of vat dyes, classification of vat dyes; Process of application of vat dyes, mechanism of vat dyeing; oxidation process; Role of additives and process parameters in vat dyeing.

Sollubilised Vat dyes. Dyeing with solubilizsed vat dyes. Fastness properties of vat dyes.

UNIT IV **[8]**

Reactive Dyes: General formula of reactive dyes. Chemical nature of reactive dyes; Classification of reactive dyes; Process of application of various kind of reactive dyes & dyeing mechanism; Role of additive and effect of process parameter in reactive dyeing. General properties of reactive dyes.

Disperse Dyes: Chemical nature of disperse dyes, application of disperse dyes on polyester; dyeing mechanism; Role of additives & effect of process parameters on disperse dyeing. Optical whitening agent, application to polyester, cotton & acrylic.

UNIT V **[8]**

TECHNOLOGY OF FINISHING

Purpose of finishing; Type of finishing, permanent & temporary; Mechanical & chemical finishing.Chemical finishing- a) anticrease finish (Using DMU & DMDHEU) b) flame retardant finish, c) water repellent & water proofing finish, d) Softening of fabric, e) anti soiling finish.

Brief description of different type of finishing machine; Stenter, Sanforizing machine, Calendering machine etc.

REFERENCE BOOKS :

1. Dyeing & Chemical Technology of Textile fibres by E.R. Trotman.
2. Chemical Technology of fibrous material by F..Sadov.
3. Chemistry of Dyes and principles of Dyeing by Dr. V.A. Shenai.
4. Technology of Dyeing by Dr. V.A. Shenai
5. Chemical Processing of Synthetic fibres by Dr. K.V. Datye & A.A. Vaidya
6. The Dyeing of Cellulose fibres by Clifford Preston.
7. Technology of Finishing – Vol. X by Dr. V.A. Shenai.
8. Introduction to Textile finishing by J.T. Marsh

NCT-503 Carpet Yarn Technology L:T:P::3:1:0

UNIT I **[8]**
Wool-shearing, clipping and grading. Impurities present in wool and their removal.

UNIT II **[8]**
Various systems of wool fibre spinning- woolen, semi worsted and worsted system- Flow chart.
Woolen spinning system- woolen cards, woolen ring frame.
Semi worsted spinning system- sequence of machines and their operations.

UNIT III **[8]**
Worsted spinning system- sequence of machines and operations,
Comparison of above spinning systems.

UNIT IV **[8]**
Requirement of carpet yarn in regards to count, twist, bulk. Faults in carpet yarn and their remedies. Other properties of carpet yarn required in handmade and machine made carpet.

UNIT V **[8]**
Principles & techniques of manufacturing braided yarn, hollow spindle system.
Spinning of Longer staple Natural Fibres like Flax, Jute, Silk etc.

References-
1. C. Vickerman, Woollen Spinning, Abhishek Publications, Chandigarh-17 (India)
2. W S Simpson and G H Crawshaw, Wool: Science and Technology, Woodhead Publishing Limited, Cambridge, England
3.Miles Collins, Wollen and Worsted Spinning, Abhishek Publications, Chandigarh-17 (India)

NCT-504 Fabric manufacture III L:T:P::3:1:0

UNIT I **[8]**

Jacquard shedding:

Classification of jacquards.

Working principle and drive to SLSC, DLSC and DLDC jacquard and their comparison.

Process of creation of jacquard design and preparation of pattern cards. Jacquard card cutting machine.

Brief idea of other fancy jacquard such as cross border, self twilling, pressure harness etc

UNIT II **[8]**

Automatic shuttle loom :

Features of automatic looms, classifications of automatic looms,

Automatic cop change loom mechanism. Concept of multicolour cop chane mechanism

Non stop and stop type shuttle change loom mechanism

Brief idea of Bobbin loader & Unifil Loom winder.

UNIT III [8]

Introduction to shuttle less weaving, its features and advantages

Beat up mechanism of shuttle less loom

Brief idea of Let off and take up mechanisms of shuttleless loom

Selvedge motions – tuck, leno ufsed selvedges.

High speed Staubli Positive cam dobby

Electronic dobby and Electronic jacquards.

UNIT IV [8]

Gripper shuttle less loom:

Projectile Gripper Loom – essential parts, picking cycle, picking mechanism, technical specifications of projectile loom

Rapier picking system – classification, essential parts, rapier head and its drive for dewas and gabler picking system , technical specifications

UNIT V [8]

Jet picking system

Air Jet Loom – essential requirements, picking cycle, picking nozzles , technical specifications

Water Jet Loom – passage of weft, picking nozzle and pump, features and limitations, technical specifications.

Basic Idea of Multiphase weaving, M8300 multiphase loom mechanism

Reference:

1.Shuttle less weaving by talavasek

2.Weaving machine, mechanism, management by Talukdar

3.Advance textile design by Watson

4. Machine manuals of weaving machines

NCT-505 Fibre Science L:T:P::2:1:0

UNIT 1 **[8]**

Concept of Melt Spinning, Polyethylene Terephthalate Fibre – Polymer production by DMT & PTA route, Chips drying, Fibre manufacturing, Effect of process variable on properties of polyester fibre,

Polyamide Fibres –Different types of polyamide fibres, Chemistry of production of Nylon 66, Nylon 66, Nylon polymer production by continuous polymerization in VK Tube, Properties of nylon 6 and Nylon 66 fibre, Brief introduction to Aramid fibres.

UNIT II **[8]**

Concept of Wet Spinning, Introduction of regenerated fibre, Concepts of regeneration of fibre, Raw material for viscose rayon, Manufacturing sequence of viscose fibre, Formation of serrated edge cross-section of viscose rayon, Introduction of cuprammonium rayon, cellulose acetate rayon and lyocell fibre in brief.

UNIT III **[8]**

Concept of Dry Spinning, Polyacrylonitrile (PAN) fibre, Use of ionic and neutral co-monomers, Two-way mass transfer phenomenon related with Acrylic spinning, Dry –jet-wet spinning process, Effect of process variables on properties of PAN fibre, Dope formation, Properties of PAN fibre, Introduction to polyurethane fibre.

UNIT IV **[8]**

Concept of drawing, drawing unit, Effect of drawing on orientation and crystallizations,

Heat setting, Influence of heat setting variables on structures & properties of fibres,
Tow to top conversion, stretch breaking , Sydel stretch breaking, Pacific tow to top cutting system.

Reference:

1. Manufactured fibre technology by V.B. Gupta & V.K. Kothari
2. Essential fibre chemistry by M.E. Cartor
3. Synthetic fibres by Fourne
4. New fibre by T.Hongu, G.O. Phillips, Woodhead publications.
5. Fibre chemistry by M. Lewin, E.M. Pearce, Marcel & Dekkan Inc.
6. Regenerated Cellulosic fibres by C. Wooding, Woodhead publications.

NHU-501 Engineering Economics L:T:P::2:0:0

NCT-551 Yarn manufacture lab III L:T:P::0:0:3

study the various parts of willow machine and their function, waste%.

study the various parts and the settings , driving arrangements, waste% extracted the production/hr of a woollen cum semi worsted card.
study the various parts of woollen ring frame and their function, twist constant of woolen ring frame and calculation of twist per inch in yarn.determine the production per spindle/hour in a woollen ring frame.

waste % extracted in a semi worsted card.

Gilling machine and their function, the draft constant, total draft and distribution of draft in a gilling machine., production/hour of a gilling machine.

study the various parts of rubbing frame and their function , drive and production/hr of a rubbing frame.

study the various parts of semi worsted R/F (with drafting) and their function, production per spindle hour of a semi worsted ring frame (with drafting), total draft, distribution of draft and draft constant of ring frame, data collection on machine parameters & process parameters from industry.
NOTE:
Experiments shall be decided on factors like:
• Facilities installed at Institute.
• Accessibility to Industry & nearby Institutes.
• Trend of Technological Developments in National & International perspective.

NCT-552 Fabric manufacture Lab III L:T:P::0:0:3

1. semi positive let-off,its calculation, settings
2. cam dobby working principle, timing and setting

3. drop box mech , card preparation
4. jacquard mech, drive, setting and timing, card preparation.
5. weft passage of shuttleless loom
6. automatic cop change mechanism
7. practice of loom turning, snap study in weave room

NOTE:

Experiments shall be decided on factors like:

1. Facilities installed at Institute.
2. Accessibility to Industry & nearby Institutes.
3. Trend of Technological Developments in National & International perspective

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NCT-553 Textile Testing lab I L:T:P::0:0:2

1. Determination of fibre length of cotton by means of Digital Fibrograph
a. 2.5 % Span Length
b. 50 % Span Length
c. Uniformity
2. Determination of fibre length of wool, fibre by means of W.I.R.A FDA.
3. Determinations of fineness of wool fibre by laser scan.
4. Determination of fineness and maturity of Cotton fibre.
5. Determination of % of medullation of wool using projection microscope.
6. Determination of trash content of cotton fibre by trash analyser.
7. Determination of vegetable matters content, wax & grease content of wool fibre by soxhlet method.
8. Determination of count of a given yarn in different counting system.
9. Determination of count of yarn using Quadrant Balance.

NOTE:

Experiments shall be decided on factors like:

• Facilities installed at Institute.
• Accessibility to Industry & nearby Institutes.
• Trend of Technological Developments in National & International perspective.

NCT-554 Textile chemistry lab II L:T:P::0:0:2

1) Development of dye by coupling method.
2) Dyeing of cotton yarn with vat dyes in sample pot dyeing machine.
3) Dyeing of cotton yarn with sulphur dyes
4) Dyeing of cotton yarn with Remazol dyes.
5) Dyeing of cotton yarn with Procion Dyes
6) Dyeing of cotton yarn with Bi-functional reactive Dyes
7) Dyeing of polyester yarn/fibre in laboratory HTHP machine.
8) Application of optical whitening agent on cotton.
9) Determination of washing fastness of dyed material.
10) Determination of washing fastness of dyed material.

NOTE:

Experiments shall be decided on factors like:

- Facilities installed at Institute.
- Accessibility to Industry & nearby Institutes.
- Trend of Technological Developments in National & International perspective.

Study and Evaluation Scheme: Bachelor of Carpet & Textile Technology

Year: 3rd, Semester-VI

Sr no.	Course code	Subject	Period			Evaluation scheme				Subject total	Credit
			L	T	P	Sessional Exam			ESE		
						CT	TA	Total			
THEORY SUBJECTS											
1	NCT-601	Textile Testing II	3	1	0	30	20	50	100	150	4
2	NCT-602	Advance fabric Manufacture	3	1	0	30	20	50	100	150	4
3	NCT-603	Advance Yarn Manufacture	3	1	0	30	20	50	100	150	4
4	NACT-604 NHTT-605 NTDT-606	Elective I Carpet Manufacture / Home Textile Manufacture–I/ Elements of design	3	1	0	30	20	50	100	150	4
5	NACT-607 NHTT-608 NTDT-609	Elective II Chemical Processing of carpet Home Textile Design/ Advance fabric structure	2	1	0	15	10	25	50	75	3
6.	NHU -601	Industrial Management	2	0	0	15	10	25	50	75	2
PRACTICAL/ DESIGN/ DRAWING											
8	NCT-651	Yarn manufacture lab IV	0	0	3	10	10	20	30	50	1
9	NCT-652	Textile Testing Lab II	0	0	2	10	10	20	30	50	1
10	NACT-653 NHTT-653 NTDT-653	Textile Lab I* Carpet Manufacture lab/ Home Textile lab I / Textile Design lab	0	0	3	10	10	20	30	50	1
11	NCT-654	Seminar	0	0	2	-	50	50		50	1
12	NGP 601	General proficiency	-	-	-	-	-	50	-	50	
		Total	16	05	10	-			-	1000	25

*** for textile subjects related to each elective groups**

Note:
In departmental electives NACT, NHTT & NTDT are for groups pertaining to specialization in Advances in Carpet Technology (ACT) Home Textile Technology (HTT) and Textile Design Technology(TDT).

NCT-601 Textile Testing II L:T:P::3:1:0

UNIT – I **[8]**

• **Tensile Testing of Yarn:**

Terms and definitions used in tensile testing:
Elastic Recovery- instantaneous & time dependent effect (Creep).
Factors affecting the tensile properties of yarn, Classification of tensile strength testing machines based on operating principles (CRE, CRL & CRT): Brief Description and principle involved in working of the some of the common instruments eg. a) Pendulum lever instrument b) Inclined plane tester, c) Lea Strength tester

• **Modern Tensile tester**- Tensile Tester operating on Strain Gauge principle. Brief description and operating principle of Universal Tensile Tester.

UNIT – II **[8]**

Fabric dimension and its measurement; Measurement of Dimensional Stability of fabric; Fabric thickness and brief description of instruments & method for fabric thickness measurement; Measurement of fabric weight per unit area; ends/inch; picks/inch; crimp of yarn in fabric; Cover factor.

UNIT III **[8]**

Fabric tensile testing: Sample preparation – Strip Test & Grab Test; biaxial tensile testing.
Fabric bending properties – Stiffness and Drape
Measurement of fabric stiffness by Shirley Stiffness Tester; Determination of Bending length, Flexural Rigidity & Bending Modulus; FAST system.KESF system.

UNIT IV **[8]**

Comfort properties (Heat & Moisture).
Air permeability of fabric and its measurement using Shirley Air Permeability Tester, factors, determining the air permeability of the fabric.
Brief idea on thermal properties of fabric.
Wicking property, MVTR,

Water proofing testing:
Terms & definitions; Methods of testing: (i) Spray Test, ii) Bundesman's Water repellency testing, iii) Shirley hydrostatic pressure head testing. fabric wetting property

UNIT V **[8]**

Crease Resistance & Crease Recovery:
Reason for creasing of fabric; Measurement of Crease Recovery of fabric using Shirley Crease Recovery tester.
Serviceability, Wear and abrasion resistance testing: Principles of testing of abrasion resistance testing; factors affecting abrasion resistance: Brief description of Martindale Abrasion Tester:
Pilling Tests: Assessment of pilling of fabric using Martindale abrasion tester & ICI pilling box.
Flammability testing:
Terms and definitions used relating to flammability; factors affecting; Flame Resistance; Determination of flammability of fabric.

References:

1. Principles of Textile Testing by J. E. Booth
2. Physical Testing of Textiles by Saville
3. Handbook of Textile Testing & Quality Control by Grover & Hamby
4. Physical Testing & Quality Control by K. Slater (Textile Institute)
5. Testing & Quality Management by V. K. Kothari

NCT-602 Advance Fabric Manufacture L:T:P::3:1:0

UNIT I [8]

Terry pile weaving – essential requirements, various terry mechanisms – loose reed, cloth control and variable sley sweep based terry mechanism, pile height adjustment.
Principle of Leno weaving – classes of leno structures, string and steel doup mechanisms.
Triaxial weaving principle.

UNIT II [8]

Weft Knitting:
weft knit structures, terms and definitions. production calculation.
Essential parts of weft knitting machine. Types of knotting m/c flat and circular
Weft knitting machines for plain knit, rib, interlock and purl knitting machines, variation for tuck and miss stitches.

UNIT III [8]

Basic warp knit structures, under lap and overlap. Essential parts of warp knitting m/c,
Brief idea of the Working principal of Tricot, Rachel & crochet Machines
calculation of Production pertaining to the knitting machine

UNIT IV [8]

Non wovens – brief idea of various types, advantages;
Classification of non-woven products and fibres used,
Principles of web formation, types of bonding techniques and various finishing used for non woven.

UNIT V [8]

Principles of needle punching, Process variables and their effect on properties of needle punched fabrics.
Brief idea of Stitch bonded fabrics, their manufacture and properties.
Brief idea of spun bonded fabrics production

References-

1. Non woven by P Madhavanmoorthi

2. Weaving machine, mechanism, management by Talukdar, Sriramulu, Ajgaonkar
3. Knitting technology by Spancer

NCT-603 Advance Yarn Manufacture L:T:P::3:1:0

UNIT-I **[8]**

Rotor Spinning: Principle of Operation; brief description of various components, Raw Material requirement & preparation of feed material; formation of yarn; back doubling; yarn withdrawal & winding;
Limitation of rotor spinning process, Numerical calculation in Rotor spinning process

UNIT – II **[8]**

Friction Spinning: Principle of operation,
brief description & process calculation of Dref 2 & Dref – 3.

UNIT III **[8]**

Air Jet Spinning: Principle of formation of yarn in Air jet spinning; Brief description of Murata Jet Spinner. Properties of Air jet spun yarn & the factor influencing air jet spun yarn, calculations of Air Jet spinning process.

UNIT-IV **[8]**

Brief discussion on Plyfil spinning system. Study of Principle of operation
• Self Twist Spinning
• Twist less Spinning.
• Wrap Spinning
Properties of yarn and limitation of these spinning systems.

UNIT V **[8]**

Textured yarn technology, various methods used for Texturing

References-

1. Eric Oxtoby, Spun Yarn Technology, Butterworths, London
2. R. V. Mahendra Gowda, New Spinning Systems, NCUTE Publications

NACT-604 Carpet Manufacture L:T:P::3:1:0

UNIT – I **[8]**

Classification of Carpets, history of carpet, carpet textures and other features. Study of raw Materials used in carpet: Fibers / Yarns / Fabrics Quality and construction of Carpet, regionally, nationally and internationally.
Acquaintance with terms associated with carpet performance in local language as well as in buying market for Hand knotted , Hand woven & tufted carpet.

UNIT – II **[8]**

Hand Knotted Carpet: Preparatory process, Construction, type of knots used, brief description of equipments used, manufacturing process in various types hand knotted carpets Persian, Tibetan carpets.

UNIT – III **[8]**

Hand loom Woven pile Carpets: Preparatory process, V and W tuft structures and the loom requirement. India knot structure- structure and weaving technique.
Flat woven Carpets manufacturing on horizontal loom, Broad Loom. Designing of flat woven carpets.
Other types of hand made carpet viz. Soumak carpets, shaggy carpet, Chindi daries and other traditional methods.

UNIT – IV [8]

Tufted Carpets:
basic tufting process sequences Construction of various, backing cloth used in tufted carpet.
hand tufting-Preparatory process, tufting equipments used e.g. tufting frame, tufting gun etc., concept of modern tufting frame,
table tufting m/c.
Chemical Coating: Various types of latex and synthetic resin used in carpet backing, chemicals used for coating and their role. Equipments used for application of coating (e.g. Mixing vessel, backing pan, oven chemical pot milling machine, latex spray gun etc.), Curing Process, Innovation in Backing: Review of Carpet Backing Systems including snehabha carpet backing system.

UNIT – V **[8]**

Defects arising in hand knotted, tufted and loom woven carpets and their remedial measures.
Finishing sequence of various types of carpets viz. singeing, Shearing, Edge Binding, Taping, Fringe and Knotting
Gradation system of carpets. Labeling and Packing of goods.

References:

1. Advances in Carpet Manufacture by K. K. Goswami, Woodhead Publishing
2. Journals & Magazines 3. Carpet-e-World
3. 3 Carpet Manufacture by Crawshaw
4. Tufted Carpet by Von Moody
5. Process control in carpet manufacturing by K K Goswami, Abhishek Publishing, Chandigarh , India.

NHTT-605 Home Textile Manufacture-I L:T:P::3:1:0

UNIT I **[8]**

Pattern, Pattern Making Techniques: Drafting and Draping Techniques.
Commercial pattern -Definition, Merits & Demerits, Selection of Commercial patterns. The Planning, Drawing and Reproduction of the Marker, the requirements of marker planning, Efficiency of the marker plan, Methods of Marker Planning and marker use.

UNIT II **[8]**

The Spreading of The Fabric to from a lay. The requirement of the Spreading process. Methods of Spreading, The Nature of Fabric Packages. The Cutting of Fabric: Objectives of cutting, Cutting Machines: Hand shears, straight knife, round knife, band knife etc.

UNIT III **[8]**

Stitch, Stitch types, Sewing machine-parts and their function, care and maintenance, sewing machine feed mechanisms, Seam, Seam types, Seam finishes.

UNIT IV **[8]**

Sewing machine needles: Functions, Parts, Selection of Sewing Needle.
Sewing Threads: Fibre Type, Construction, Thread Sizing and Thread Packages.
Sewing Machinery, Associated work aids of Sewing Machines, Button hole making, button sew, bar tack, label sewers. Modern concepts on tufting frames

UNIT V **[8]**

The purpose of Pressing, Categories of Pressing, the means of pressing, pressing equipments and methods, Pleating, Permanent press, the state of pressing.
Fusing definition, advantage of using Fusible interlinings, Requirement of fusing, fusing process,Fusing technique,. Snehabha carpet backing system,

Reference:

1. Introduction to clothing production management-second edition. A.J.Chuter, Blackwell science, New Delhi.
2. Garment technology for fashion designers-Gerry Cooklin, Blackwell science, New Delhi.
3. Introduction to clothing manufacture- Gerry Cooklin, Blackwell science, New Delhi.
4. Process control in home textiles manufacturing by K K Goswami, abhishek publishing Chandigarh, India.

NTDT-606 Elements of design L:T:P::3:1:0

UNIT 1 **[8]**

Figurative Composition: Elements of Design; Introduction of Drawing; Experimental use of variety of media such as Pencil, ink, spray techniques etc.; Study of Different Geometrical structures i.e. Line, Triangle, Circle, curve, forms, shapes etc. & its impact on visualization & perception;

UNIT II **[8]**

Colour Theory; Light & Pigment theory of Colour; Mixture of Colour Pigments-Primary secondary; tertiary colours; Colour Composition of Rainbow colours; Chromatic Circle; Colours & Combinations Colour System of Munsell, Ostwald;

UNIT III **[8]**

Principle of Colours: Harmony chromatic, Achromatic, Analogous, Complementary & High- Key Colour Scheme; Modification of Colours: To get Shades, tint and tone by mixing with another colour / black / white; Positive Image, Negative (or) after Image. Colour Appeal in Juxtaposition, Colour Relation in Juxtaposition.

UNIT IV **[8]**

Methods and Materials of the Following: Pastel Colours, Water Colour Colours, Poster Colours, Acrylic Colours; Fundamental of Pictorial Composition, their importance and values: Line, Form, Volume, Colour Harmony, Contrast, Textures, Balance, Light and Shade Perspective, Rhythm;.

UNIT V **[8]**

Drawings from outdoor sources i.e. parks, museum & architectural buildings, Utilization of Drawing techniques & other media and idea to develop design and drawing; Converting natural form of design into Abstract, modern, contemporary for retaining essential characteristics features; Colour forecasting of Carpet & Textile Designs.

Reference:

1. How to draw and paint by A Walter foster; published by E.D. Galgotia and sons.
2. Flowers and still life by A Walter foster; published by E.D. Galgotia and sons.
3. How to draw and paint textures of animals by A Walter foster; published by E.D. Galgotia and sons.
4. The Encyclopedia of Patterns and Motifs by Dorothy Bosomworth; Studio London
5. Designer's Guide to Colour 3 by Jeanne Alen; Chronicle Books, San Francisco
6. Fabric Painting by Jill Kennedy and Jane Varsall; BT Batsford Ltd., London
7. Designer's Guide to Japanese Patterns by Jeanne Allen; Chronicle Books, San Francisco
8. Handwoven Fabrics of India by Jasleen Dhamija and Jyotindra Jain; Mapin Publishing Pvt. Ltd., Ahmedabad
9. Impression - A Classic Collection of Textile Design by K Prakash; The Design Point, B-7, Shiv Krupa Apartments, Old Nagaradas Road, Andheri (E) Bombay 400 069 (India)
10. Textile Designs- Idea and Applications by Joel Sokoelov; PBC International, Inc., New York
11. History of Textile Design by VA Shenai; Sevak Publications, Bombay 400 031
12. Fabric Art Heritage of India by Sukla Dass; Abhinav Publications
13. Fabric Painting Made Easy by Nancy Ward; Craft Kaleidoscope, Chilton Book Company, Radnor, Pennsylvania
14. Textile Designs- 200 years of Patterns for Printed Fabrics Arranged by Motifs, Colours, Period and Design by Susan Maller and Joost Elffers; Thames and Hudson
15. English and American Textiles from 1790 to the Present by Mary Schoeser and Celia Rufey; Thames and Hudson
16. Computer Colour-10,000 computer - Generated Process colours by Michael and Pat Rogondino; Angus and Robertson Publishers (Practical reference of colours Processed by Mixing)
17. Colour in Theory and Practice by HD Murray; Chapman and Hall Ltd., 37 Essex Street, WC 2, London 1952
18. An Introduction to Colour by Ralph M Evans; London Chapman and Hall Ltd.
19. Designer's Guide to Colour 1, 2, 3, 4, 5, 6 by Ikuyashi Shibukawa and Yum Takahashi; Chronicle Books, San Franscisco
20. Colour Harmony- A guide to Creative Colour Combinations by Hideaki Chijiiwa, Professor Musashino College of Art; India Book Distributors
21. Variety Fashion for Freedom by SA Huisain; Trends Today, Bombay, India
22. The 4 - Colour Person by Dr Max Luscher; Simon and Schuster
23. The Colour Handbook how to Use Colour in Commerce and Industry by EP Danger; Gower Publishing Company, Old Post Road, Brookfield Vermont 05036, USA
24. Watson's Textile Design and Colour by Z Grosicki; Universal Publishing Corporation, Bombay (India)
25. Process control in carpet manufacture, K K Goswami, Abhishek Publishing Chandigarh
26. Hand book of textile design, Jacquie Wilson, Wood head publishing, UK

NACT-607 Chemical Processing of carpet L:T:P::2:1:0

UNIT I [8]

Chemical Processing related to Carpet Impurities present in wool like suint, wool grease and surface soiling. Process for the removal. Emulsion scouring process in relation to detergents and wool grease removal. Principles of the tests carried out on grease. Action of squeeze press and nature of roller surfacing and wrapping. Use of energy and methods of monitoring and controlling energy. Heat recovery systems. Centrifuging systems used in recovery of wool grease. Need for treatment and methods used. Wool drying, pressing and packing

UNIT – II **[8]**

Acid Dyes:

Generalized formula and classification of acid dyes, Procedure for application of various types of acid dyes to wool & other fibres (e.g. Nylon & Silk) Nylon; mechanism of acid dyeing & dye fibre bond, effect of different process parameters and role of additives in acid dyeing. Fastness properties of acid dyes.

Chrome Dyes: Concept of mordants; formation of chromium complexes; Method of application of chrome dyes (i) Chrome mordantbprocess, (ii) After Chrome process, (iii) Meta Chrome process. Brief idea on fastness properties of chrome dyes. Chromosol Process.

Metal Complex Dyes: General formula and structure, classification of metal complex dyes- 1:1 Metal complex dyes & 1:2 Metal complex dyes; Procedure of application of metal complex dyes and mechanism of dyeing fastness; Properties of metal complex dyes.

UNIT – III **[8]**

Chemical coating and finishing

• Objectives of Latexing, Merit of Latex, Application of latex, formulation of latex compound & role of auxiliaries; quality assessment of latex, problems and remedial measures of latexing, synthetic latex and its advantages.

Modern backing technique substituting latexing.

UNIT – IV **[8]**

Chemical washing of carpets: Traditional System, Mechanised System including pre and post washing sequence. Detailed idea on various type of washing like antique wash, herbal wash etc. (Chemicals used and process parameters, equipments are to be studied). Sheen and glaze characteristics of woolen and silk carpets.

Modern Processing including enzymatic finishing and various functional finshises, process control including eco control.

REFERENCE BOOKS:

1. Wool Dyeing by D.M. Lewis
2. Chemistry of dyes and principles of dyeing by Dr. V.A. Shenai.
3. Technology of dyeing by Dr. V.A. Shenai
4. Encyclopedia of Carpet by B.S. Chauhan
5. Carpet Manufacturing & Chemical Processing of Carpets – IICT Bhadohi
6. Advance in Carpet Manufacture by K. K. Goswami

7 Process control in carpet manufacturing by K K goswami, Abhishek Publishing , Chandigarh India

NHTT-608 Home Textile Design L:T:P::2:1:0

UNIT I **[8]**

Fullness: Definition, Darts, tucks, pleats. Flares, Godets, Gathers, Shirrs and Frills or Ruffles. Calculating the amount of materials for these types.

Placket finishes: Definition, characteristics of a good placket, classification continuous bound, bound and faced (two piece) plackets, Fly opening and zipper placket. Tailored placket.

UNIT II **[8]**

Introduction to Embroidery, Advantage of design potentials with Embroidery & other methods. Setting of fabric on Embroidery frame, Precaution during setting the fabric on frame. Different types of Embroidery Stitches, Use of different decorative materials to enhance the embroidery look.Production of Embroidery Samples Hand / Machine. Precaution / Safety regulation during working on Embroidery Machine.

The use of Components & Trims :- Labels and Motifs , Linings Interlining, Wadding ,Lace, Braids & Elastics , Seam Binding & Tape , Shoulder Pad , Fasteners, performance properties of Components and trims.

UNIT III **[8]**

Darning, Patch Work: Definition, Different styles of Patchwork Techniques such as Pieced Patchwork, Shell Patchwork, Suffolk Puffs, Crazy Patchwork, Log Cabin Patchwork, Strip Patchwork, Seminole Patchwork, Folded Star Patchwork, Mayflower Patchwork and Pleated Patchwork. Appliqué: Definition, Various Styles of Appliqué Techniques, Standard appliqué, Appliqué Perse, Reverse appliqué, Padded appliqué, folded appliqué, Shadow appliqué, Lace appliqué Quilting: Definition, Various Styles of Quilting, Wadded Quilting, Padded Quilting, Corded Quilting, Shadow Quilting.

UNIT IV Printing: Conventional and modern styles, methods,materials&substrates , process and cnotrol measure, Defects _ cause and remedies [8]

References:

1. Fundamentals of dress by Kettunen,Marietta, Mc.Graw Hill Book Company,New York.
2. Practical Dress Design -Principles of Fitting and pattern making by Mabel.D.Erwin, Macmillan Co., New York.
3. Basic Process of Clothing Construction by Doongali D.S. Deshpande,R., NewRaj Book Depot, New Delhi.
4. Fashion Encyclopedia by Catherine Houck., St.martin's Press, Newyork.
5. Betty Foster's - Fashion maker by Betty Foster, Heinemann Professionalpublishing Limited,-Oxford.
6. Sewing For the Apparel Industry by Claire Schaeffer, Practice Hall,Inc-NewJersey.
7. Mc Calls easy sewing Book by McCall's, Mc Calls Co- operation New York.
8. Traditional Needle Arts Embroidery by Katrin Cargill, Great Britain.
9. Indian Embroidery by Kamala Devi Chartophadhya, Wiley Einstein Ltd., Delhi.
10. The Costumes and Textiles of India by Jamila Brij Bhushan, D.B.Taraporevala Sons & Co., Bombay
11. Traditional Embroideries of India by Dr.Shailaja.D.Naik, A.P.H.Publishing Corporation-New Delhi.
12. Historic Costumes by Lesla K.T, Chas.A.Bernd & Co., Inc, Illinois.
13. Saris of India by RTA Kapur & Amba Sanyal,Wiley Eastern Ltd., New Delhi
14.World Costume by Angela Bradshaw,Adams and Charles Black,London.
15. Process control in home textiles manufacture+ by K K goswami, Abhishek Publishing , Chandigarh India.(In press)

NTDT-609 Advance Fabric structure L:T:P::2:1:0

UNIT –I **[8]**
jacquard designing on fabric.

UNIT –II **[8]**
Damask and brocade fabric. Extra warp and extra weft designed fabric.

UNIT –III **[8]**
Warp backed and weft backed fabric. Swivel and lappet fabric design.

UNIT IV **[8]**
Double cloths
Introduction, classification, stitched double cloths, interchanging double cloths.
Treble cloth
Tapestry structures- Introduction, simple weft face tapestries, combined warp & weft tapestries.

References:
1. Watson’s Textile Design and Colour by Z Grosicki; Universal Publishing Corporation, Bombay (India)
2. Grammer of Textile Design – Nisbet
3. Structural Fabric Design by – Kilby
4. Woven Structures and Design – Doris Goerner; British Textile Technology GroupWIRA House, Leeds (UK)
5. Fibre to Fabric by Ghosh
6. Watson’s Advance Textile Design

NHU-601 Industrial Management L:T:P:: 2:0:0

NCT-651 Yarn Manufacture lab IV L:T:P::0:0:3

1. To study different parts & their functions of a TFO m/c.
2. Draw the gearing diagram of VJ-150HS TFO & determine the TPI of the yarn & twist constant of the machine.
3. Draw the gearing diagram of VJ-150HS TFO & determine the take up roller speeds in terms of m/min & productivity of the m/c.
4. Draw the gearing diagram of the transmission of drive of the take up roller of VJ-150HS TFO & determine the overfeed % & the m/c constant for overfeed %.
5. Draw the gearing diagram of Ring doubling m/c & determine grams per spindle for a given count.
6. Draw & describe the following mechanism:
   i) Cradle lifting mechanism of VJ-150HS TFO
   ii) Stop motion for Volka Ring Doubling m/c
7. To study different parts a DREF 2000 m/c & study their functions.
8. To calculate Production per head of DREF2000 m/c.
9. To study different parts a Rotor m/c & study their functions.
10. To calculate Production per head of Rotor m/c.

NCT-652 Textile Testing Lab II L:T:P::0:0:2

1. Determination of twist in single and folded yarn and to determine twist factor used in spinning the yarn.
2. Determination of hank of rove and hank of sliver.
3. Determination of C.S.P. of yarn.
4. Determination grams per square meter of a piece of fabric.
5. Determination of ends/inch; picks/inch; warp & weft count from a given piece of fabrics.
6. Determination of bending length, flexural rigidity, bending modulus & fabric stiffness by Shirley fabric

stiffness tester.
7. Determination of abrasion resistance and pilling resistance using Martindale Abrasion Tester.
8. Determination of fabric strength using universal strength tester.
9. Determination of flammability of a fabric.
10. Determination of water repellency using Bundesmann water repellency tester.
11. Determination of pilling of fabric by pill box.
NOTE:
Experiments shall be decided on factors like:
• Facilities installed at Institute.
• Accessibility to Industry & nearby Institutes.
• Trend of Technological Developments in National & International perspective.

Textile Lab I L:T:P::0:0:3

NACT-653

Carpet manufacture lab

1. Preparation and weaving of hand knotted carpets
2. Practice Flat dhurry weaving on horizontal and vertical looms
3. Preparation and practice of manual Tufting process.
4. Preparation and weaving of pile carpet on broad loom.
5. Kibby tufting machine.
6. Dyeing of woolen yarn with Levelling acid dyes,Milling acid dyes, chrome dyes, 1:2 Metal Complex dyes,
7. Dyeing of silk yarn with Levelling acid dyes,1:2 Metal Complex dyes,
8. Studies on light fastness, washing Fastness , rubbing Fastness properties of Carpet yarn.
9. Studies on various kinds of carpet finishes.
10. Application of Latex coating on tufted carpets.

NHTT-653
HOME TEXTILE LAB I

1. To study the various tools of Pattern Making Software.
2. To study the various parts and its functions of the Straight Knife Cutting Tool.
3. To study the various parts and its functions of the various Sewing Machines.
4. Practice of machine stitches on paper & final practice of machine on fabric.
5. Sample preparation for basic Hand Stitches.
   i) Temporary Stitches (Even basting, Uneven Basting, Diagonal, Slip stitch)
   ii) Permanent Stitches (Running, Hemming, Back, Run and Back, Over casting, Whipping)
6. Preparation of seam samples.
   i) Superimposed seam.
   ii) Lapped seam.
   iii) Bound seam.
   iv) Ornamental seam.
   v) Edge finishing.
   vi) Flat seam.

NTDT-653

Textile Design Lab :

1. Drawing and painting Equipments & Tools.
2. Geometrical structures, Exploration of forms, Shapes & line with in the natural forms or objects. Still Life drawings
3. Stripes & Checks effect on fabric,
4. Colour & Design Creations: Dhurries- 30^{ct}, 60^{ct}, 80^{ct} And Boxes & Round Compositions, Colour Wheel, Concept of shade tone,
5. Carpet designs:
   Tufted - Floral & Modern Designs,
   Tibbetan – Modern geometrical & Floral, Converting Natural form of designs into Abstract, Modern & Contemporary, Traditional Designs,
6. Colour Forecasting Ideas.

NOTE:
Experiments shall be decided on factors like:
• Facilities installed at Institute.
• Accessibility to Industry & nearby Institutes.
• Trend of Technological Developments in National & International perspective.

NCT 654 SEMINAR L:T:P::0:0:2