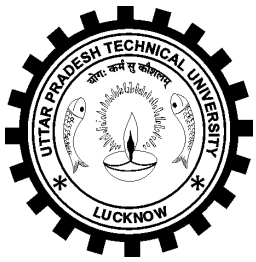
U.P. TECHNICAL UNIVERSITY, LUCKNOW



2nd , 3rd and 4th Year

[Effective from session 2009-10]

B.TECH. CARPET & TEXTILE TECHNOLOGY

U. P. TECHNICAL UNIVERSITY, LUCKNOW
Study and Evaluation Scheme
(Effective from the session: 2009-10)

Year: 2nd, Semester-III

S. No.	Course Code	Subject	Periods			Evaluation Schemes				Subject Total	Credit
						Sessional Exam.			ESE		
			L	T	P	CT	TA	Total			
THEORY SUBJECTS											
1.	ECT 301	Textile Mechanics	3	1	0	30	20	50	100	**150**	**4**
2.	EAS 301/ EOE 031- EOE 038	Mathematics III / science based open electives**	3	1	0	30	20	50	100	**150**	**4**
3.	EHU 301/ EHU 302	Industrial Psychology/ Industrial Sociology	2	0	0	15	10	25	50	**75**	**2**
4.	ECT-302	Yarn Manufacture-I	2	1	0	15	10	25	50	**75**	**2**
5.	ECT-303	Fabric Manufacture-I	3	1	0	30	20	50	100	**150**	**3**
6.	ECT-304	Fibre Science	3	1	0	30	20	50	100	**150**	**2**
7.		* Human Values & Professional Ethics	2	1	0	15	10	25	50	**75**	**-**
PRACTICAL/ DESIGN/ DRAWING											
9.	ECT-351	Yarn Manufacture-I	0	0	2	--	20	20	30	**50**	**2**
10.	ECT-352	Fabric Manufacture-I	0	0	3	--	20	20	30	**50**	**2**
11.	ECT-353	Identification of Fibres	0	0	3	--	20	20	30	**50**	**2**
12.	ECT-354	Fabric Analysis	0	0	2	--	20	20	30	**50**	**2**
13.	**GP 301**	**General Proficiency**	--	--	--	--	--	50	--	**50**	**1**
		Total								**1000**	**26**

* Human Values & Professional Ethics will be offered as compulsory Audit Course for which passing marks are 40% in theory and 50% in aggregate. Students will be required to audit it within the period of his/her study. There will not be carryover in this course and a failure student will require to repeat this course.

Paper Code	** Science based open electives		
EOE 031/EOE 041	Introduction to Soft Computing (Neural Networks, Fuzzy Logic and Genetic Algorithm)		
		EOE 035/EOE 045	Polymer Science & Technology
EOE 032/EOE 042	Nano Sciences	EOE 036/EOE 046	Nuclear Science
EOE 033/EOE 043	Laser Systems and Application	EOE 037/EOE 047	Material Science
EOE 034/EOE 044	Space Sciences	EOE 038/EOE 048	Discrete Mathematics

Note: The Course (s) will be offered on the basis of available resources in the Institute.

U. P. TECHNICAL UNIVERSITY, LUCKNOW
Study and Evaluation Scheme
(Effective from the session: 2009-10)

Year: 2nd, Semester-IV

S. No.	Course Code	Subject	Periods			Evaluation Schemes				Subject Total	Credit
						Sessional Exam.			ESE		
			L	T	P	CT	TA	Total			
THEORY SUBJECTS											
1.	EHU 402/ EHU 401	**Industrial Sociology/ Industrial Psychology**	2	0	0	15	10	25	50	**75**	**2**
2.	EOE 041-EOE 048/ EAS 401	Science based open electives/ Mathematics-III	3	1	0	30	20	50	100	**150**	**2**
3.	ECT-401	Yarn Manufacture-II	3	1	0	30	20	50	100	**150**	**4**
4.	ECT-402	Fabric Manufacture-II	3	1	0	30	20	50	100	**150**	**4**
5.	ECT-403	Textile Testing-I	2	1	0	15	10	25	50	**75**	**2**
6.	ECT-404	Textile Chemistry-I	3	1	0	25	20	50	100	**150**	**3**
7.	EHU-111	*** Human Values & Professional Ethics**	2	1	0	15	10	25	50	**75**	--
PRACTICAL/ DESIGN/ DRAWING											
8.	ECT-451	Yarn Manufacture-II	0	0	2	--	20	20	30	**50**	**2**
9.	ECT-452	Fabric Manufacture-II	0	0	3	--	20	20	30	**50**	**2**
10.	ECT-453	Textile Testing-I	0	0	3	--	20	20	30	**50**	**2**
11.	ECT-454	Textile Chemistry-I	0	0	2	--	20	20	30	**50**	**2**
12.	**GP 401**	**General Proficiency**	--	--	--	--	--	50	--	**50**	**1**
		Total								**1000**	**26**

U. P. TECHNICAL UNIVERSITY, LUCKNOW
Study and Evaluation Scheme
(Effective from the session: 2010-11)

Year: 3rd, Semester-V

S. No.	Course Code	Subject	Periods			Evaluation Schemes				Subject Total	Credit
						Sessional Exam.			ESE		
			L	T	P	CT	TA	Total			
THEORY SUBJECTS											
1.	EHU-501	**Engineering and Managerial Economics**	3	1	0	30	20	50	100	**150**	**3**
2.	ECT-501	Industrial Manufacturing Process	3	1	0	30	20	50	100	**150**	**3**
3.	ECT-502	Carpet Manufacture-I	3	1	0	30	20	50	100	**150**	**4**
4.	ECT-503	Carpet Yarn Manufacture-I	3	1	0	30	20	50	100	**150**	**3**
5.	ECT-504	Textile Chemistry-II	2	1	0	15	10	25	50	**75**	**2**
6.	ECT-505	Textile Testing-II	2	1	0	15	10	25	50	**75**	**2**
7.	EHU-111	*** Human Values & Professional Ethics**	2	0	0	15	10	25	50	**75**	**-**
PRACTICAL/ DESIGN/ DRAWING											
8.	ECT-551	Carpet Manufacture-I	0	0	3	10	10	20	30	**50**	**2**
9.	ECT-552	Carpet Yarn Manufacture-I	0	0	3	10	10	20	30	**50**	**2**
10.	ECT-553	Textile Testing-II	0	0	3	10	10	20	30	**50**	**2**
11.	ECT-554	Textile Chemistry-II	0	0	3	10	10	20	30	**50**	**2**
12.	**GP 501**	**General Proficiency**	--	--	--	--	--	50	--	**50**	**1**
		Total								**1000**	**26**

U. P. TECHNICAL UNIVERSITY, LUCKNOW
Study and Evaluation Scheme
(Effective from the session: 2010-11)

Year: 3rd, Semester-VI

S. No.	Course Code	Subject	Periods			Evaluation Schemes				Subject Total	Credit
						Sessional Exam.			ESE		
			L	T	P	CT	TA	Total			
THEORY SUBJECTS											
1.	EHU-601	**Industrial Management**	3	0	0	30	20	50	100	**150**	**3**
2.	EACT-601 EHTT-602 ETDT-603	**Departmental Elective-I** Chemical Processing of Carpet Home Textile-I Basic drawing	3	1	0	30	20	50	100	**150**	**4**
3.	EACT-604 EHTT-605 ETDT-606	**Departmental Elective-II** Carpet Manufacture-II Sewing & Embroidery Technique History of Design	3	1	0	30	20	50	100	**150**	**4**
4.	ECT-607	Carpet Yarn Manufacture-II	2	1	0	15	10	25	50	**75**	**2**
5.	ECT-608	Fabric Manufacture-III	3	1	0	30	20	50	100	**150**	**3**
6.	ECT-609	Carpet Testing	2	1	0	15	10	25	50	**75**	**1**
7.	EHU-111	*** Human Values & Professional Ethics**	2	0	0	15	10	25	50	**75**	**-**
PRACTICAL/ DESIGN/ DRAWING											
8.	ECT-651	Chemical Processing of Carpet	0	0	3	10	10	20	30	**50**	**2**
9.	ECT-652	Fabric Manufacture-III	0	0	3	10	10	20	30	**50**	**2**
10.	ECT-653	Carpet Manufacture-II	0	0	3	10	10	20	30	**50**	**2**
11.	ECT-654	Carpet Testing	0	0	3	10	10	20	30	**50**	**2**
12.	**GP 601**	**General Proficiency**	--	--	--	--	--	50	--	**50**	**1**
		Total								**1000**	**26**

Note: In departmental elective (I to VI) subjects can be chosen either for EACT or EHTT or ETDT only as departmental electives for a group pertains to specialization in Advances in Carpet Technology (ACT) whereas EHTT group pertains to specialization in Home Textile Technology (HTT) and ETDT group pertains to specialization in Textile Design Technology (TDT).

U. P. TECHNICAL UNIVERSITY, LUCKNOW
Study and Evaluation Scheme
(Effective from the session: 2011-12)

Year: 4th, Semester-VII

S. No.	Course Code	Subject	Periods			Evaluation Schemes				Subject Total	Credit
						Sessional Exam.			ESE		
			L	T	P	CT	TA	Total			
THEORY SUBJECTS											
1.	EOE-071- EOE-074	**Open Elective-I****	3	1	0	30	20	50	100	**150**	**4**
2.	EACT-701 EHTT-702 ETDT-703	**Departmental Elective-III** Computer Aided Designing (Carpet & Textiles) Computer Aided Designing (Home Textiles, pattern making & planning) Computer Aided Designing and Manufacturing (Textiles)	3	1	0	30	20	50	100	**150**	**4**
3.	EACT-704 EHTT-705 ETDT-706	**Departmental Elective-IV** Marketing & Merchandising of Carpet & Textiles Home Textiles-II Trends in Textile Designing	3	1	0	30	20	50	100	**150**	**4**
4.	ECT-707	Carpet & Textile Designing	3	1	0	30	20	50	100	**150**	**3**
5.	ECT-708	Textile Chemistry-III	3	1	0	30	20	50	100	**150**	**2**
6.	EHU-111	*** Human Values & Professional Ethics**	2	0	0	15	10	25	50	**75**	**-**
PRACTICAL/ DESIGN/ DRAWING											
7.	ECT-751	**Laboratory *** EACT EHTT ETDT	0	0	3	--	20	20	30	**50**	**2**
8.	ECT-752	**Project**	0	0	3	--	50	50	--	**50**	**2**
9.	ECT-753	**Seminar**	0	0	2	--	50	50	--	**50**	**2**
10.	ECT-754	**Industrial Training Viva-Voce**	0	0	2	--	50	50	--	**50**	**2**
11.	**GP 701**	**General Proficiency**	--	--	--	--	--	50	--	**50**	**1**
		Total								**1000**	**26**

Paper Code **** Open Electives I**

EOE-071 Entrepreneurship Development
EOE-072 Quality Management
EOE-073 Operations Research
EOE-074 Introduction to Biotechnology

The Course (s) will be offered on the basis of available resources in the Institute.

Note: In departmental elective (I to VI) subjects can be chosen either for EACT or EHTT or ETDT only as departmental electives for a group pertains to specialization in Advances in Carpet Technology (ACT) whereas EHTT group pertains to specialization in Home Textile Technology (HTT) and ETDT group pertains to specialization in Textile Design Technology (TDT).

* Practical for specific group shall be conducted separately.

U. P. TECHNICAL UNIVERSITY, LUCKNOW
Study and Evaluation Scheme
(Effective from the session: 2011-12)

Year: 4th, Semester-VIII

S. No.	Course Code	Subject	Periods			Evaluation Schemes				Subject Total	Credit
						Sessional Exam.			ESE		
			L	T	P	CT	TA	Total			
THEORY SUBJECTS											
1.	EOE-081- EOE-084	**Open Elective-II****	3	1	0	30	20	50	100	**150**	**4**
2.	 EACT-801 EHTT-802 ETDT-803	**Departmental Elective-V** Emerging Technology Quality Control for Home Textiles Design Management	3	1	0	30	20	50	100	**150**	**4**
3.	 EACT-804 EHTT-805 ETDT-806	**Departmental Elective-VI** Advances in Carpet Manufacturing Advances in Home Textiles Advances in Textile Designing Technology	3	1	0	30	20	50	100	**150**	**4**
4.	ECT-807	Advance Fabric Manufacturing	3	1	0	30	20	50	100	**150**	**3**
5.	EHU-111	*** Human Values & Professional Ethics**	2	0	0	15	10	25	50	**75**	**-**
PRACTICAL/ DESIGN/ DRAWING											
6.	ECT-851	**Project**	0	0	12	--	100	100	250	**350**	**8**
7.	**GP 801**	**General Proficiency**	--	--	--	--	--	50	--	**50**	**1**
		Total								**1000**	**24**

Paper Code **** Open Electives-II**

EOE-081 Non Conventional Energy Resources
EOE-082 Nonlinear Dynamic Systems
EOE-083 Product Development
EOE-084 Automation and Robotics

The Course (s) will be offered on the basis of available resources in the Institute.

Note: In departmental elective (I to VI) subjects can be chosen either for EACT or EHTT or ETDT only as departmental electives for a group pertains to specialization in Advances in Carpet Technology (ACT) whereas EHTT group pertains to specialization in Home Textile Technology (HTT) and ETDT group pertains to specialization in Textile Design Technology (TDT).

TEXTILE MECHANICS L-T-P 3-1-0 ECT 301

UNIT I

Types of gears. Nomenclature of spur and helical gears. Conjugate action and involute tooth profile. Force analysis in gear drives. Thrust loads. Bevel and worm gears. Velocity ratio of epicyclic gear trains. Differential gearing in roving frame and comber. Design of cone drums for scutcher and roving frame. [7]

UNIT II

Flat, V, round and timing belts. Tape drives. Belt drives for special purposes. Adjustment of belt tensions. Chain drives and polygonal effect. Analysis of tensions, torque, bending forces and power transmission in drives. Linkage mechanism. Sliding contact bearings, friction in journal bearings. Classification and use of ball and roller bearings. **[7]**

UNIT III

Design of transmission shaft and drafting rollers: Safety factor, tensile, compressive, shear, bending and torsional stresses. Design for static load, lateral and torsional rigidities. Roller eccentricity and vibration and its effect on textile processing. [7]

UNIT IV

Molecular architecture, configuration, conformation, amorphous and crystalline phases, glass transition, plasticization, crystallization, melting, factors affecting Tg and Tm of fibre. Basic structure of a fibre-one dimensional orientation, semicrystalline nature of fibre, structure of fibrils. [7]

UNIT V

Control Mechanisms to conserve Energy pertain to Carpet & Textile Industry. [7]

References

1. V.B. Gupta & V.K. Kothari, Manufactured Fibre Technology.
2. A.A. Vaidya, Production of Synthetic Fibres.
3. R.W. Moncrieff, Man-Made Fibres
4. S.P. Mishra, A Text book of Fibre Science and Technology.
5. B.L. Deopura, B. Gupta, Man made Fibres
6. S.B. Junnarkar & Dr. H.J. Shah, Applied Mechanics.

YARN MANUFACTURE-I L-T-P: 2-1-0 ECT-302

UNIT-I

Classification of various spinning process according to the type of fibres. Explanation of common terms like Count, Twist, Length, Strength, Elongation etc. [6]

UNIT-II

Brief description of objective and methods of Ginning. Objective, methods and principles of Blow room. Different types of opening and cleaning devices used in bloe room and control of the same. Waste control and fibre transportation in Blow room. Maintenance and simple production calculation in Blow room. [8]

UNIT-III

Objective and method of cotton system of carding. Different actions and their control. Card clothing's, settings, speeds and their effects on production and quality.
Maintenance and production calculations. [8]

UNIT-IV

Objective and basic principles involved in Draw frame operations. Different parts and their functions in Draw frame. Drafting operations, behavior of fibres in drafting zone, distribution of drafts, autoleveller. Faults and their remedies. Maintenance and production calculations. [8]

References-

- Indra Doraiswamy, P Chellamani and A Pavendham, Cotton Ginning, Textile Progress, Volume 24, Number 2
- Eric Oxtoby, Spun Yarn Technology, Butterworths, London
- A.R. Khare, Elements of Carding and Drawing, Sai Book Centre, Bhandup, Mumbai
- Gilbert R. Merill, Cotton Opening and Picking, Gilbert R. Merill, 364 Varnum Ave, Lowell, Mass
- Gilbert R. Merill, Cotton Drawing and Roving, Gilbert R. Merill, 364 Varnum Ave, Lowell, Mass
- W. G. Byerley and J. T. Buckley, W. Miller, G. H. Jolly and G. Battersby, F. Charnley, Manual of Cotton Spinning, Vol.-III Carding, The Textile Institute, Butterworths, 1965
- W. Klein, Manual of Textile Technology, The Textile Institute, Manchester, Vol. 2,3

FABRIC MANUFACTURE – I L-T-P 3-1-0 ECT 303

SECTION – A PREPARATORY PROCESS

UNIT – I

- **Winding:** Purpose of winding; basic terms and definition. Principle of working of various anti patterning device. Classification of winding machine and their suitability for different types of yarn. [3]

- Principle of operation of important parts of winding machine- e.g. tensioning device, waving device, balloon controller, slubcatcher, stop motion, traversing device, stop motion length measuring device, yarn clearer etc [4]
- Types of clearer mechanical & electronic clearer; Principle of operation of various types of clearer. Optimisation of clearer setting to control the yarn fault & number of breaks. Principles and brief description of design features of Automatic winding Machine: Splicer, Auto Knotter, Cone Data System, Auto doffer etc [3]
- **Weft Winding-** rewound weft, its importance; Automatic type pirn winding machine, bunching motion, winding and binding coil ratio.
  Simple Calculation related to production and efficiency.
  Evaluation of winding machine performance: Clearing efficiency & knot factor, production efficiency etc.
  Defects in winding – their origin and remedial measure [4]

UNIT – II

- **Warping:** Objective of warping, types of warping machine, brief description of different parts of warping machine. Tension Regulation of warp and stop motions. Principle of operation of sectional warping machine. Recent design development of warping machine. Maintenance of warping machine. [3]
- **Sizing**: Purpose of Sizing: Types of sizing machine- Slow Speed & High Speed sizing machine.

  Brief Description and function of different parts of slasher sizing and modern multi cylinder sizing machine. Factors affecting size take up.
  Sizing ingredients and preparation of size paste for different type of yarn including woollen yarn. [5]

SECTION – B **FABRIC MANUFACTURE – I**

UNIT – III

- Basic principles involved in formation of cloth, Broad classification of looms – Introduction of handloom and durrie loom.
  Classification of power loom, lay out of a power loom showing different parts.
  Study on primary and secondary motion of power loom: loom timing correct setting and tuning of different parts. Various types of sheds and their comparative study using loom timing diagram (Different types of heald reversing motion their uses and limitation) Mechanism of tappet shedding and its limitation. Construction of Negative Shedding Tappet. [8]

UNIT – IV

- Classification of picking motion: a) Over pick, b) Under pick
  Principle & Description of different part:
  Mechanism of over pick and under pick motion; comparison of over picking and under picking. Factors affecting initial velocity of shuttle. Power of Picking, picking accessories. Shuttle checking device. Causes and remedial measures of Shuttle flying, Behaviour of Weft during unwinding from shuttle. [6]

UNIT – V

Beat up & Sley Movement: Sley eccentricity and its effect; effect of Crank and Crank arm on sley eccentricity; Sley eccentricity used in different types of looms [4]

References

1. Principles of weaving by Marks and Robinson
2. Weaving mechanism vol 1 & 2 by N N Banerjee
3. Weaving by Talukdar
4. Textile mathematics vol 3 by J E Booth
5. Fabric manufacture vol 1 & 2 by NCUTE

Fibre Science L-T-P 3-1-0 **ECT-304**

UNIT – I

Essential & Desirable properties of a Textile fibre, Classification of textile fibres. Definitions of various terms connected with structure, properties & dimension of textile fibres; crystallanity, orientation, amorphous region, Glass transition and Melting Temperature. [6]

UNIT – II

Cotton fibre: Classification of different varieties of cotton, Chemical and Morphological structure of cotton fibre, Various Physical and Chemical Properties of cotton fibre, Formation of Oxycellulose and Hydrocellulose.

Bast fibres: Brief idea on structure, Physical & Chemical properties of Bast fibres such as Jute, Flax, Hemp & Ramie. Process of Retting. [8]

UNIT – III

Classification of wool fibre according to length and diameter,
Chemical composition of wool, Chemical Bondings existing in wool, Morphological structure of wool fibre in details, Physical and chemical properties of wool fibre
Silk: Classification of silk according to origin, Chemical composition of Silk, Chemical Bondings existing in Silk, Physical and Chemical Properties of Silk, Degumming and weighting of silk. [10]

UNIT – IV

Melt Spinning Operation, Production and Properties of Melt spun fibres like
Polyamide (Nylon6, Nylon 66) and Polyester
Drawing of man made fibres – Brief idea on principles of operation & effects. [8]

UNIT – V

Solution Spinning Operation, Production and Properties of Solution spun fibres like Viscose, Acetate and Acrylic fibres.
Introduction to Heat setting and Texturizing operations. [8]

References:

1. V.B. Gupta & V.K. Kothari, Manufactured Fibre Technology.
2. A.A. Vaidya, Production of Synthetic Fibres.
3. R.W. Moncrieff, Man-Made Fibres
4. S.P. Mishra, A Text book of Fibre Science and Technology.
5. B.L. Deopura, B. Gupta, Man made Fibres

YARN MANUFACTURING– I (LAB) L-T-P 0-0-2 **ECT 351**

BLOW ROOM

- To study working mechanism of a mixing bale opener.
- To study different parts of miniature blow room line and also to sketch the passage of cotton through it.
- To study gearing diagram of a miniature Blow room line and calculate the speed of individual components.
- To study the mechanism of piano feed regulating motion of Blow Room.
- Determination of cleaning efficiency of an opener/cleaner.
- Calculate the production per hour of a miniature blow room line for a given lap density.

CARDING

- To study the different parts of miniature carding machine and calculate the speed of various movable parts.
- Determination of cleaning efficiency of miniature card.
- Calculation of total draft and draft distribution in a miniature carding machine.
- To find the important settings between various carding organs of miniature card.
- To study the different parts of LC 300 carding machine including the various stop motions incorporated and their function.
- To study the important settings between the various carding organs of LC 300 carding machine.
- To draw the gearing diagram of carding machine and calculate the speed of various moving parts of LC 300 carding machine.
- Calculate the production per hour of LC 300 carding machine for given sliver hank.

DRAWFRAME

- To study the different parts of draw frame including various stop motion incorporated and their functions.
- Draw the gearing diagram of draw frame and calculate the speed of various moving parts.
- Draw the gearing diagram of draw frame and calculate the delivery speed and production for given hank.
- Study of various settings and calculation of total draft and distribution of the draft of a draw frame.

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.

FABRIC MANUFACTURE – I (PRACTICAL) L-T-P 0-0-3 ECT 352

1. To study various types of knots used in winding machine.
2. Study of Driving motions and different parts of cone & cheese winding machines.
3. Calculation for traverse ratio, angle of wind, net winding rate and production per drum of winding machine (cone/cheese).

4. Study of setting of Yarn clearer.
5. Study of various types of tensioner used in winding machine.
6. To study various parts of power loom and its working, oiling and greasing points.
7. To study loom timing and its importance, Primary, Secondary & Auxiliary motions.
8. Study of different parts of Over pick and Under pick loom.
9. To study Tappet shedding, Speed & Speed ratio of different shafts (Bottom shaft, Crank Shaft, Tappet Shaft) for given design & loom.
10. To study Reed Count, Heald Count of power loom.

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.

Identification of Fibres (PRACTICAL) L-T-P 0-0-3 ECT 353

1. Identification of following textile fibres by microscopic appearance

    a. Cotton
    b. Wool
    c. Silk
    d. Jute
    e. Banana
    f. Sisal
    g. Viscose

2. Identification of following textile fibres by burning test

    a. Cotton
    b. Wool
    c. Polyester
    d. Nylon
    e. Viscose
    f. Acrylic
    g. Silk
    h. Jute

3. Identification of following textile fibres by chemical dissolution test

    a. Cotton
    b. Wool
    c. Polyester
    d. Nylon
    e. Viscose
    f. Acrylic
    g. Silk
    h. Polypropylene
    i. Polyethylene

4. Identification of fibres in various blends by chemical dissolution method and to find the blend composition
5. Determination of Moisture content & Moisture regain of a fibre.

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.

FABRIC ANALYSIS (PRACTICAL) L-T-P 0-0-2 ECT 354

11. To study various types of woven fabric constructions
    a) Primary Fabrics for Tufted Carpets
    b) Secondary Fabrics for Tufted Carpets
    c) Third Backing fabrics for tufted carpets
    d) Analysis of tufted carpets
12. Practice reproduction of Primary Fabrics for Tufted Carpets
13. Practice reproduction of Secondary fabrics for Tufted carpets
14. Practice reproduction of Third backing fabrics for Tufted carpets
15. Practice reproduction of Tufted carpet
16. To study elementary of carpet construction.
17. Analysis of given market sample (s).

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.

YARN MANUFACTURE-II L-T-P 3-1-0 ECT-401

UNIT-I
Importance and sequence of combing preparatory process. Objective and methods of combing. Description of various parts of combing machine and combing cycle.
Maintenance and production calculations. **[8]**

UNIT-II
Objective and operation of speed frame. Description of different parts of speed frame and their functions
- Drafting arrangement
- Twisting arrangement
- Winding and package building

Defects arising in speed frame and their remedies.
Modern developments in speed frame. Maintenance and Calculations **[8]**

UNIT-III
Objective and operation of Ring Frame. Description of different parts of Ring Frame and their functions.
- Drafting arrangement
- Twisting arrangement
- Winding and package building

Maintenance and Calculations **[8]**

UNIT-IV
Modern development and scope of development in Ring Frame in the light of
- Variable speed drive
- Compact spinning
- Any other new development and automations

Spinning geometry, spinning technique and spinning angle etc. and control of the same.
Improve the productivity and quality of Ring Frame performance. **[8]**

UNIT-V

Machinery balancing in a spinning mill, The idealized helical yarn structure, Yarn count and Twist Factor, Twist contraction, Limits of Twist, Packing of fibres in Yarn, Fibre migration, Extension of continuous filament yarn. **[8]**

References-

- Eric Oxtoby, Spun Yarn Technology, Butterworths, London
- E. De Barr, H. Catling, The principles and theory of ring spinning, The Textile Institute, Butterworths.
- A.R. Khare, Elements of Combing, Sai Book Centre, Bhandup, Mumbai
- W. Klein, Manual of Textile Technology, The Textile Institute, Manchester, Vol. 3,4,5
- J.W.S. Hearle, P. Grosberg, S. Backer, Structural mechanics of fibres, yarn and fabrics, Wiley-Interscience

FABRIC MANUFACTURE – II L-T-P 3-1-0 ECT 402

UNIT – I

Automatic loom: Advantage over non automatic loom, features of automatic loom, classification of Automatic LoomCalculation of power of picking, velocity and acceleration of picking element, energy consumed. Simple calculation pertaining to production and efficiency **[8]**

UNIT – II

Warp Selection Mechanism

Dobby Shedding:

Scope & Limitation of dobby Principle of operation & brief description of mechanism of i) Climax Dobby, ii) Cam Dobby, iii) Paper Dobby iv) Knowle's Dobby.

Setting & timing; Dobby Pegging Plan; Dobby faults & adjustment. **[8]**

UNIT – III

Weft Selection Mechanism:

Weft Selection for patterning; Two colour & four colour (4x1) drop box loom; Brief description on mechanism of pick at will & pick and pick motion.

WARP PROTECTING DEVICE:

Brief description & principle of operation of fast – reed & loose reed motion Comparison of loose reed & fast reed mechanism; **[8]**

UNIT – IV

WARP STOP MOTION:

General considerations & its usefulness; Brief description on working principle of a) Mechanical, b) Electromechanical Stop Motion

WEFT STOP MOTION:

Brief description on working principle of Side Weft Work & Center Weft Fork; Principle of operation of electric weft stop motion **[8]**

UNIT – V

Take-up Motion: Brief idea on 7 wheel and 5 wheel take up motion, advantage of Shirley Take-up.

Let-off Motion: Brief idea on negative and positive let-off motion.

Temple: Function of temple, various types of temple used and their operation.

Automatic Weft Replenishment:

Introduction of Weft Replenishment Mechanism, Brief idea of automatic Pirn Changing mechanism, Mechanical & Electrical Weft feeler

Function and Economics of Bobbin loader & Unifil Loom winder. **[8]**

References

1. Principles of weaving by Marks and Robinson
2. Weaving mechanism vol 1 & 2 by N N Banerjee
3. Weaving by Talukdar
4. Textile mathematics vol 3 by J E Booth

5. Fabric manufacture vol 1 & 2 by NCUTE

TEXTILE TESTING – I **L-T-P 2-1-0** **ECT 403**

UNIT – I

Objectives of Testing, Principle of sampling and sample preparation for cotton testing. Effect of moisture on different fibre properties; moisture content & regain; conditioning of test samples; Brief description and working principle of moisture meter. [7]

UNIT – II

Fibre Length: Technical significance, measurement of fibre length and variation.
Concept of span length and determination of 2.5% and 50% span length. Concept of Baer Sorter Diagram.
Fibre Fineness: Technical significance, various methods of determination of fibre fineness – air flow method.
F.Q.I and its technical significance.
Fibre maturity: Technical significance, various methods of determination of fibre maturity. Determination of medullation % of wool. [8]

UNIT – III

Strength: technical significance and various related definitions; comparative stress strain diagram of different fibres.

Principle & brief description of modern fibre testing equipments like-H.V.I., AFIS-N, OFDA, WIRA FDM, Laser Scan, Almeter etc. [7]

UNIT – IV

Yarn Fault Testing:
Classification of Yarn Fault: Based on length and cross-sectional range sources of various types of faults and their remedies; Concept of yarn clearer setting & clearer curve.

Yarn Hairiness:
Causes and effect of hairiness of the yarn; remedial measures; determination of hairiness of yarn, hairiness index. [8]

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

TEXTILE CHEMISTRY – I **L-T-P 3-1-0** **ECT-404**

UNIT – I

PREPARATORY PROCESS:
Various Types of Impurities: present in Textile Materials e.g. cotton, silk, wool, jute etc. and their removal. Sequence of preparatory process prior to dyeing for natural & manmade fibres (including their blends) with special reference to cotton, wool, polyester and blends. e.g. (i) singeing , (ii) desizing, (iii) scouring, (iv) bleaching, (v) heat setting etc. Brief description of the principles and machineries involved and chemical reagent used in the above mentioned processes. [8]

UNIT – II

Role of various process parameter (e.g. temperature, pH, Concentration, Pressure etc.) and auxiliaries in various preparatory processes.
Description of the key preparatory machines:

a) J-Box, b) Kier, c) Jumbo Jigger, d) Drying machines.

Defects and damages occurred in preparatory processes- their cause and remedies. [7]

UNIT – III

Natural Dyes:

Importance of natural dyes in present scenario, comparison with synthetic dyes, source wise classification of natural dyes. Mordants used for natural dyes and their applicability for various fibres. Significance of natural dyes in Carpet perspective. Merits, demerits and practical applicability. [6]

Dyeing Process:

Preparation of dyeing material for dye extraction; extraction process of dyes and their standardization; Application procedure for natural dyes; process parameters for natural dyeing. Study on fastness properties of natural dyes. [6]

UNIT – IV

Wet Processing of Wool Carpet Yarn:

Yarn scouring (Principles and practices), Chemical setting (Principal, technologies and correlation with carpet properties). [4]

SYNTHETIC DYES:

Direct Dyes:

Generalised formula of Direct dyes: Classification of direct dyes; Mechanism of Direct dyes and procedure for application of direct dyes; dye-fibre bond; effect of different process parameters (e.g. temp, time, pH) & role of various additives in dyeing process; fastness properties of direct dyes; after treatments for direct dyes. [5]

UNIT – V

Basic Dyes:

General formula, chemical classes of Basic dyes; Use of Mordants for dyeing of cellulosic fibres; Procedure of application of Basic dyes on acrylic fibres and mechanism of dyeing; Role of dye bath assistants & process parameters in dyeing with basic dyes, Fastness properties of basic dyes. [5]

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; Effects of process parameters involved in diazotisation. Diazotisation recipe and stabilization of diazonism salt.

Development of Shades- Coupling, Basic Chemistry involved in coupling.

Fastness properties of Azoic Colours. [6]

References:

1. Dyeing & Chemical technology of Textile fibres by E.R. Trotman.
2. Chemical Technology of fibrous material by F..Sadov.
3. Chemical Technology in the Pre-Treatment process of Textile by Dr.S. R. Karmakar.
4. Technology of Bleaching Vol. IV, by Dr. V.A. Shenai.
5. Technology of Bleaching by J.T Marsh
6. Chemistry of Dyes and principles of Dyeing by Dr. V.A. Shenai.
7. Technology of Dyeing by Dr. V.A. Shenai

YARN MANUFACTURING–II (PRACTICAL) L-T-P 0-0-2 ECT 451

SPEED FRAME

1. To identify different parts including various stop motions of LF 1400A speed frame and study their function.
2. Draw the complete gearing diagram of a speed frame and find the speed of the following: - a) All drafting rollers b) Spindle diameter
3. Calculation of draft constant, total draft & draft distribution in LF 1400A speed frame.

4. To sketch and study the builder motion (Shifting of belt of cone drum, bobbin rail reversing motion, regulation of bobbin speed & shortening of lifting stroke) in details of LF 1400A speed frame.
5. To study the different change positions of a LF 1400A speed frame.
6. To study the principle of twisting and calculate the twist per inch of a roving from the gearing diagram.
7. From the gearing diagram calculate the front roller speed in meters per minute and calculate the production in Kg/Shift for a given roving hank.
8. Sketch the drafting system of LF 1400A showing the different parts and describe their functions.

RING FRAME

1. Study the different parts of a ring frame and their functions.
2. Sketch the drafting system of ring frame showing the different parts and describe their functions.
3. Determination of shore hardness of cots, bottom roller eccentricity, top arm pressure of a Ring Frame and speed frame.
4. Determination of twist constant of a Ring frame and to find twist per inch in yarn.
5. Draw the gearing diagram and find the draft constant, Break draft constant and distribution of draft.
6. From the gearing diagram calculate the front roller speed in meters per minute and calculate the production in Kg/Shift for a given yarn count.
7. Study the bobbin building mechanism of a ring frame.

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.

FABRIC MANUFACTURE – II (PRACTICAL) L-T-P 0-0-3 ECT 452

1. Various parts of power loom, oiling and greasing points.
2. How to start power loom & pick control.
3. Calculate the production per hour of a loom and also find speed of various moving parts.
4. Study of various weft stop motions viz.
    a. Side Weft fork
    b. Centre Weft fork
5. Fitting and tuning of loose reed motion and Fast reed motion.
6. Study of let off motion.
7. Fitting and tuning of Seven wheels take up motion and to calculate the cloth take up per unit time.
8. To study weft replenishment mechanism.
9. To study Warp stop motion.
10. Study of various parts of Dobby and Dobby Pegging Plan.

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 TESTING – I (PRACTICAL) L-T-P 0-0-3 ECT 453

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.

TEXTILE CHEMISTRY – I (PRACTICAL) **L-T-P 0-0-2** ECT 454

1. Desizing of cotton fabric using various types of desizing agents.
2. Scouring of natural fibres viz. cotton in form of yarn or fabric and find the scouring loss.
3. Scouring of wool in fibre.
4. Degumming of silk and calculation of weight loss percentage.
5. Bleaching of cotton by sodium Hypochlorite.
6. Bleaching of cotton by sodium Chlorite.
7. Bleaching of cotton by hydrogen peroxide.
8. Bleaching of silk by sodium hydrosulphite.
9. Dyeing of Cotton Yarn with Direct Dyes.
10. Dyeing of Cotton Yarn with Basic Dyes.

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.

ECT-501

Industrial Manufacturing Process L-T-P 3-1-0

UNIT –I
Manufacturing material and application:

Introduction to manufacturing process. Basic terminologies, Economical and technological considerations. Different engineering materials, Properties, Nomenclature, Basics of heat treatment. (7)

UNIT –II
Manufacturing Planning:

Selection of site, Building planning, Plant locations & layout and balancing of machinery for carpet/textile industry (7)

UNIT –III
Manufacturing Organization:
Plant utilities services, Atmospheric conditioning, Safety arrangement, material handling & transportation for carpet/textile industry (7)

UNIT –IV
Manufacturing Management:
Contract review, Production Planning and product mix, work Standardization of Productivity, Inventory Control, Payments of wages & incentives, Factory act for carpet/textile industry (7)

UNIT –V
Miscellaneous topics

Importance of materials & methods of manufacturing towards technological and socio-economic developments, Plastics and composite materials, Contamination; sources & remedies for Carpet/Textile Industry. (7)

References:

1. Chapman W A J, "*Workshop Technology Part 1-3"* , 5th Ed., Viva Books Pvt. Ltd,New Delhi (1998)
2. Hajra Chowdary S K and Hajra Chowdhay A K, *"Work Shop Technology"* 10th Ed. Media Promoters and Publishers
3. Raghuwanshi R S, "*Work Shop Technology*", 9th Ed. Dhanpat Rai and Sons,New Delhi
4. Jain R K, "*Prodction Technology*", 5th Ed. Khanna Publishers, New Delhi (1995)
5. **Lindberg R A "*Process and materials of Manufacturing",* 4th Ed., Prentice Hall of India, New Delhi (1999).**
6. Operations and Production Management by Charry
7. Operations Management by Chase
8. Process control in Spinning by ATIRA
9. Process control in weaving by ATIRA

CARPET MANUFACTURE – I L-T-P 3-1-0 ECT 502

UNIT – I

Fundamentals of Carpets: Classification of Carpets, history, textures and other relevant features.
Materials used in carpet: Fibres/ Yarns/ Fabrics used, Familiarization with terms used to describe Quality and construction of Carpet, regionally, nationally and internationally.

Gradation system of carpets. Acquaintance with terms associated with carpet performance in local language as well as in buying market for Hand knotted, Hand woven & tufted carpet. [8]

UNIT – II

Hand Knotted Carpet: Preparatory process, Construction, type of knots used, brief description of equipments used, manufacturing process in various types hand knotted carpets including Tibetan type. Defects arising in hand knotted carpets and their remedial measures. [8]

UNIT – III

Hand Woven Carpets: Preparatory process, construction, type of looms used in hand woven carpet, brief description of various types of looms & tools used in hand woven carpets. Various types of defects arising in hand woven carpets and their remedial measures.
Flat woven Carpets manufacturing & finishing process including Broad Loom. [8]

UNIT – IV

Tufted Carpets: Preparatory process, constructions, basic principles, process sequences, tufting equipments used e.g. (tufting frame, tufting gun etc.) Schortz hand tufted machine, Construction of various, backing cloth used in tufted carpet. [8]

UNIT – V

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, Problems arising in Latexing and their remedial measures.
Innovation in Backing: Review of Carpet Backing Systems including indigenously developed system. [8]

References:

1. Advances in Carpet Manufacture by K. K. Goswami, Woodhead Publishing
2. Journals & Magazines

3. Carpet-e-World
4. Carpet Manufacture by Crawshaw
5. Tufted Carpet by Von Moody
6. Fundamentals of Carpet Maintenance by Eric M Brown

CARPET YARN MANUFACTURE-I L-T-P 3-1-0 ECT-503

UNIT-I

Wool-shearing, clipping and categorization. Impurities present in wool and their removal. Sustainability of wool fibre as raw material in carpet yarn. [7]

UNIT-II

Various systems of wool fibre spinning- woolen, semi worsted and worsted system. Flow chart and their description for all the system:-
Woollen- Blending, opening, carding and spinning
Semi worsted and worsted- Blending, opening, carding, gilling, combing etc. and spinning.
Difference of all these systems and their utilities. [8]

UNIT-III

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. [8]

UNIT-IV

Specification of cotton yarn commonly used in carpet manufacturing. [7]

UNIT – V

Spinning of Longer staple Natural Fibres like Flax, Jute, Silk etc. Concept of Mule, Flyer, Slip Draft etc. [6]

References-

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

TEXTILE CHEMISTRY – II L-T-P 2-1-0 ECT 504

UNIT – I

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. **[8]**

Unit II

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. **[6]**

UNIT – III

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. [8]

UNIT – IV

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. [8]

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

TEXTILE TESTING – II L-T-P 2-1-0 ECT 505

UNIT – I

- 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; Interpretation of V(L) & B(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. [7]

UNIT – II

- **Tensile Testing of Yarn:**
  Terms and definitions used in tensile testing:
  Elastic Recovery- instantaneous & time dependent effect (Creep).
  Factors affecting the tensile properties 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. [7]

UNIT – III

a) 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.
b) Fabric Tensile Testing – Strip Test & Grab Test; principle of operation of various fabric strength tester.
c) Air permeability of fabric and its measurement using Shirley Air Permeability Tester, factors, determining the air permeability of the fabric.
d) Brief idea on thermal properties of fabric.
e) Fabric Stiffness, Handle, Drape & Comfort(Heat & Moisture).
Measurement of fabric stiffness by Shirley Stiffness Tester; Determination of Bending length, Flexural Rigidity & Bending Modulus; use of Kawabata and FAST [8]

UNIT – IV

f) Crease Resistance & Crease Recovery:
Reason for creasing of fabric; Measurement of Crease Recovery of fabric using Shirley Crease Recovery tester.
g) 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.
h) Flammability testing:
Terms and definitions used relating to flammability; factors affecting; Flame Resistance; Determination of flammability of fabric.
i) Water proofing testing:
Terms & definitions; Methods of testing: (i) Spray Test, ii) Bundesman's Water repellency testing, iii) Shirley hydrostatic pressure head testing. [8]

References:

6. Principles of Textile Testing by J. E. Booth
7. Physical Testing of Textiles by Saville
8. Handbook of Textile Testing & Quality Control by Grover & Hamby
9. Physical Testing & Quality Control by K. Slater (Textile Institute)
10. Testing & Quality Management by V. K. Kothari

CARPET MANUFACTURING – I (PRACTICAL) L-T-P 0-0-3 ECT 551

A. Handknotted Variety

1. Preparation of warp
2. Mounting & Setting of warp
3. Preparation of weft (pile material, lachchi & tharry)
4. Practice of knots
5. Preparation of a small sample
6. Study of various parts of a vertical carpet loom and their function.
7. Study & identification of various types of knots used in handknotted carpet and determination of knots/ square inch in a carpet.

B. Tibetan Variety

1. Practice of knots
2. Preparation of small sample

C. Hand-tufted

1. Framing of primary backing including tracing of design
2. Practice of tufting using hand & electric gun
3. Preparation of small sample.

D. Loom made Carpet

1. Study of the features of the loom
2. Study of various parts of handloom and their function.
3. Installation of handloom for durry and vertical carpet loom
4. Preparation of small sample (Broad loom/ durry)

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.

CARPET YARN MANUFACTURING (PRACTICAL) – I ECT 552

L-T-P 0-0-3

1) To study the various parts of willow machine and their function.
2) To study the waste%, extracted in willow machine.
3) To study the various parts and the settings of a woollen cum semi worsted card and their function.
4) To study the driving arrangements of a woollen cum semi worsted card.
5) To study the various setting of a woollen card.
6) To study the waste% extracted in woollen card.
7) To determine the production/hr of a woollen cum semi worsted carding machine.
8) To study the various parts of woollen ring frame and their function.
9) To study the twist constant of woolen ring frame and calculation of twist per inch in yarn.
10) To determine the production per spindle/hour in a woollen ring frame.
11) To study the waste % extracted in a semi worsted card.
12) To study the various parts of a gilling machine and their function.
13) To determine the draft constant, total draft and distribution of draft in a gilling machine.
14) To determine the production/hour of a gilling machine.
15) To study the various parts of rubbing frame and their function.
16) To study the transmission of drive and production/hr of a rubbing frame.
17) To study the various parts of semi worsted R/F (with drafting) and their function.
18) To study the production per spindle hour of a semi worsted ring frame (with drafting).
19) To study the total draft, distribution of draft and draft constant of ring frame.

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 TESTING – II (PRACTICAL) L-T-P 0-0-3 ECT 553

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 CHEMISTRY (PRACTICAL) – II **L-T-P 0-0-3** ECT 554

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.

CHEMICAL PROCESSING OF CARPET L-T-P 3-1-0 EACT 601

UNIT – I

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 [8]

UNIT – II

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 mordant process, (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. [8]

UNIT – III

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.
- Shearing, Third Backing, Edge Binding, Taping, Fringe and Knotting – Finishing. Modern backing technique substituting latexing. [8]

UNIT – IV

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. [8]

UNIT – V

Chemical process on wool

Bleaching – prevention of dyebath yellowing – Insect resist treatments – Shrink proofing – Anti static properties – plane retardant wool – Photo stabilizers – stain blocking – polymer grafting setting.

Wool scour effluent treatment – process control and quality assurance – Energy conservation.

[6]

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

Home Textile-IL-T-P 3-1-0 EHTT 602

Unit – I

Introduction to Textile Furnishings, Different Types of Furnishing

Material:-Definition, different types of furnishings – Woven and Non –Woven factors affecting selection of home furnishings.

Floor Covering: - Floor coverings – hard floor coverings, resilient floor Coverings, soft floor coverings Rugs, cushions and Pads, Use and care [8]

Unit – II

Wall coverings: - Wall coverings, Use and care

Draperies and curtains: - choices of Fabrics, calculating the amount of material needed, hints on making curtains hang well. Methods of furnishing draperies at the top with tucks or pleats .Use of drapery rods, Hooks , tapes rings and pins Definition , different types of doors and windows , their application. [8]

Unit - III

Living room Furnishing: - Sofa covers, wall hangers, Cushion, Cushion Covers, Upholsteries, Carpets, Textile Wall covers, Durry, Lamp shades, Soft Decorative pieces i.e. toys etc. Curtains Bolster and Bolster covers. [8]

Unit -IV

Bed Linens: - Definitions, different types of Bed linens, Sheets, Blankets and Blankets covers, Comforts and Comfort covers bedspreads , Mattress and Mattress covers and Pads, Quilts, Gowns, Curtains, Pillows and Pillows covers, Bath Mats, Bath Towel, their use and care. [8]

Unit – V

Kitchen: - Definitions types of Kitchen linens, Dish cloth, Hand Towels Kitchen apron, Bread basket, Napkins, Gloves, Fridge handle covers, Fridge cover, Mixi cover, their use and care.

Table Linens:-Definitions , Different types of Table linens, Table Mats , Table cloth and hand Towels – types, selection use and care.

Hospital: - Hospital Linen & their importance, Nature of fabric suitable for Hospital for different purpose, colour of linen & their effect on patient mind etc. [8]

Reference:-

1. Soft furnishing book by Kartin Cargill, Reed consumer books limited, London.
2. Soft furnishing by saarah Campbell and Hilary More, MacDonald books,
QED publishers Limited London.
3. Simplicity's (1993) –Simply the best home decoration book, A fire side book as published by Simon and Schulster (New York). London. The simplicity pattern company Inc.
4. Home Fashion
5. Cloths line (Journal)
6. House & Garden (Journal)
7. Textiles Para El Hogar (Journal) Distribution & Suibscription – Ecuadar, 75, entresuelo, 08029 Barcelona, Espane, e.mail: publica@publica.es, castellon@publica.es

Basic Drawing **L-T-P: 3-1-0** **ETDT 603**

UNIT 1:

Figurative Composition:

1. Basics of Design, Introduction of Drawing.
2. Experimental use of variety of media such as Pencil, ink, spray techniques etc.
3. Study of Different Geometrical structures i.e. Line, Triangle, Circle, curve, forms, shapes etc. & its impact on visualization & perception.
4. Basic of carpet designs; material and method used in carpet designing and colouration.
5. Motif of design & drawing (Historical, aesthetical).
   Indian Motif (Indiya Collection)
6. Drawings from out door sources i.e. parks, museum & architectural buildings. Utilization of Drawing techniques & other media and idea to develop design and drawing. [**10]**

UNIT 2:

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

a) Munsell b) Ostwald [**5]**

UNIT 3:

Principle of Colours: Harmony chromatic, Achromatic, Analogous, Complementary & High- Key Colour Scheme.[**4]**

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. **[4]**

UNIT 4:

Methods and Materials of the Following:

a) Pastel Colours b) Water Colour Colours c) Poster Colours d) Acrylic Colours [**5]**

Fundamental of Pictorial Composition, their importance and values:

a) Line b) Form c)Volume d)Colour Harmony e) Contrast
f) Textures g) Balance
h) Light and Shade 1) Perspective 2)Rhythm

Converting natural form of design into Abstract, modern, contemporary for retaining essential characteristics features. Drawing of all designs studied in this module & creating different types of design i.e. Modern look, traditional look of design by mixing/modifying different design styles. [6]

UNIT 5:

Ornamentation of fabric by using Colour Stripes & Checks, Spotted Patterns, Simple regular Patterns, Simple irregular patterns, Compound Order. Counter Change, Graduated Pattern [**5]**

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)

CARPET MANUFACTURING – II **L-T-P 3-1-0** **EACT 604**

UNIT – I

Description & functions of various equipments used in finishing of carpet e.g. Thokai Tools: Bokani, Beroni, Shearing machine, Hand shearing machine, finishing, scissors, embossing scissor, fabric scissor, pile separator, steel teeth comb, embossing hand tools. [8]

UNIT – II

Classification of machine made carpets;
Range of yarn count used in machine made carpets for warp, weft and pile yarn. Properties of carpet yarn and their impact of functional properties of carpet.
Brief description on characteristic features and manufacturing process of machine made Tufted carpet. Study of various

steps involved in the machine tufting. [8]

UNIT – III

Classification of Woven Carpets, brief description on characteristic features and manufacturing processes of various

types of woven carpets with special reference to Wilton and Axminster looms. [8]

UNIT – IV

Non Woven Carpet: Types of non woven carpet, their construction and end use, Brief description of process and machineries involved in manufacturing of Needle Punched, Adhesive Bonded, Electrostatically flocked carpet. [8]

UNIT – V

Removal of various types of stain in Carpet; Care and Maintenance of Carpets; Procedure for Labelling, Final Inspection and packaging of Carpet, [6]

References:

1. Advances in Carpet Manufacture by K. K. Goswami, Woodhead Publishing
2. Journals & Magazines
3. Carpet-e-World
4. Carpet Manufacture by Crawshaw
5. Tufted Carpet by Von Moody
6. Fundamentals of Carpet Maintenance by Eric M Brown

SEWING & EMBROIDERY TECHNIQUES L-T-P 3-1-0 EHTT-605

UNIT I:
Sewing Equipments:
Sewing machine-parts and their function, care and maintenance. Sewing kit, special attachments.
Tools for measuring, marking, cutting, pressing and general. Selection of threads and needle for various types of fabric **[8]**

UNIT II:
Seams and fullness:
Definition, choice of seam, common seams and their finishes. Fullness –Definition, Darts, tucks pleats. Flares, Godets, Gathers, Shirrs and Frills or Ruffles.
Calculating the amount of materials for these types. **[8]**

UNIT III:
Embroidery:
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 (i.e. Straight Stitch, Running Stitch, Whip Stitch, Satin Stitch, Stem stitch, Cross Stitch, Lock stitch, Pipe stitch etc.), Use of different decorative materials to enhance the embroidery look. **[8]**
UNIT IV:
Trimmings and Decoration:
Trimming and decorations, definitions, types Bias trimming, Ricrac, ruffles, embroidery, smocking, faggoting, Appliqué, lace, lace motifs, scalloped edging, Decorative fastenings, Tassels, Drawn Thread work, Quilting, Applique. **[8]**

UNIT V:
Mending and renovating clothing items: -
Definition, types of darning and patching, methods of renovating clothing items.
Placket finishes:

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

History of Design **L-T-P 3-1-0** **ETDT 606**

UNIT 1:

Indian Sculpture, Architecture, Jewellery & Painting

Pre-Historic Cave Painting of the World (Europe, Africa, India), Indus Valley Civilization-Sculpture, Terracotta & Pottery **[8]**

UNIT 2:

Gupta Sculpture- Hindu, Budhist and Jain. Terracotta and Pottery, Mughal Period Sculpture, Paintings **[8]**

Egyptian Painting & Sculpture, Greek Sculpture & painting,

UNIT 3:

Ancient West Asia, Europe, African Arts & Their influence in Design:

Chinese & Japanese arts & Sculpture, 18th & Early 19th Century European Art
William Morris Design, History of Modern Design. **[7]**

UNIT 4:

Brief discussion on traditional carpet & floor covering history & origin of carpet, Mir, Prayer rug, Abusson, Herati, Isfahan, Kirman, Kazak, Heriz, Kashan, Saroukh, Bidjar, Tabriz etc. **[7]**

UNIT 5:

William Morris Design, Critical Review of the above culture & influence on Modern Design, History of Modern Design. Analysis of Design Trends from Ancient to the Modern Period, Critical Review & differences between all the Arts & Sculpture Style studied. [8]

References:

1. Costumes of India by Dorris Flynn, Oxford and IBH - Publishing Co., New Delhi.
2. Traditional Needle Arts Embroidery by Katrin Cargill, Great Britain.
3. Indian Embroidery by Kamala Devi Chartophadhya, Wiley Einstein Ltd., Delhi.
4. The Costumes and Textiles of India by Jamila Brij Bhushan, D.B.Taraporevala Sons & Co., Bombay
5. Traditional Embroideries of India by Dr.Shailaja.D.Naik, A.P.H.Publishing Corporation-New Delhi.
6. Historic Costumes by Lesla K.T, Chas.A.Bernd & Co., Inc, Illinois.
7. Saris of India by RTA Kapur & Amba Sanyal,Wiley Eastern Ltd., New Delhi
8. 8.World Costume by Angela Bradshaw,Adams and Charles Black,London.
9. Bhartiya Kala by Vasudev sharan Shastri, Prithivi Prakashan (in Hindi Language)

10. Prachin Bharat Ka Itihas by Jha & Shrimali (in Hindi Language)
11. 11.Prachin Bharat ka Rajnaitik anvam Sanskritik Itihas, by Radha Krishan Chaudhari (in Hindi Language)
12. 12. Watson's Textile Design and Colour by Z Grosicki; Universal Publishing Corporation, Bombay (India)
13. Textile Design by Thames & Hudson
14. Soft Surfaces by Thames & Hudson
15. Persian Carpets by Dr. Seyed
16. Hand Crafted Indian Textile by Roli Books
17. Heritage by Design Point

CARPET YARN MANUFACTURE-II L-T-P 2-1-0 ECT-607

UNIT-I

Objective and operations of doubling and twisting. Basic principles involved in assembly winding, Ring twisting, T.F.O. etc. [6]

UNIT-II

Limitation of Ring Spinning Process; Evaluation and possibilities of new spinning process.

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, [8]

UNIT – III

Friction Spinning: Principle of operation, brief description of Dref – 2 & Dref – 3; Raw material requirement; limitation of friction spinning.
Air Jet Spinning:Principle of formation of yarn in Air jet spinning; Raw material requirement. Brief description of Murata Jet Spinner. Properties of Air jet spun yarn & the factor influencing them. [8]

UNIT-IV

Brief discussion on Plyfil spinning system. Study of Principle of operation; Raw material requirement; Properties of yarn and limitation of following new spinning systems:

- Self Twist Spinning
- Twist less Spinning.
- Wrap Spinning [8]

References-

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

FABRIC MANUFACTURE – III L-T-P 3-1-0 ECT 608

UNIT – I

Modern Loom: Principle governing design of unconventional looms. Advantage of shuttle less looms over shuttle loom Comparative performance and cost factors. [4]

UNIT – II

Jacquard Shedding:
Classification of various types of jacquards and their limitations Jacquards Driving Brief study of jacquard of following types-
a. Single lift single cylinder. b. Double lift single cylinder
c. Double lift Double cylinder d. Electronic Jacquard [6]

UNIT – III

Introduction to different mechanisms for weft insertion

Rapier system of Weft insertion – flexible and rigid rapier Tip transfer and loop transfer, weft control mechanism, Calculations pertaining production, efficiency. Beat up system for heavy loom, double beat up. [7]

UNIT – IV

Introduction and brief idea of picking, shedding & beat up of following looms:

i) Air Jet Loom
ii) Water Jet Loom
iii) Gripper Loom

Selvedge: Centre selvedge and leno motion.

Basic Ideas of Multiphase and circular loom

Comparison of different system of weft insertion [8]

UNIT – V

Theory of Fabric Structure:

Pierce's geometry of plain woven fabrics, Crimp interchange in woven fabricsPractical applications and limitations of simple cloth geometry [6]

References

6. Principles of weaving by Marks and Robinson
7. Weaving mechanism vol 1 & 2 by N N Banerjee
8. Weaving by Talukdar
9. Textile mathematics vol 3 by J E Booth
10. **Fabric manufacture vol 1 & 2 by NCUTE**

CARPET TESTING L-T-P 2-1-0 ECT 609

UNIT – I

Performance evaluation of carpets and other floor coverings- Classification of floor covering according to use and structure. Need for carpet testing. Different aspects of quality testing & performance assessment of carpets, Norms for various performance parameters of carpet [7]

UNIT – II

Testing of functional properties of carpet and floor coverings- (a) Appearance retention (b) Carpet durability including Soilability, carpet abrasion resistance (c) Resilience (d) Tendency of pilling and fuzzing (e) Other properties like insulation properties, acoustic properties, electrostatic properties etc. [7]

UNIT – III

Brief Description and principle operation of following Carpet Testing Equipments:

Dynamic Loading Machine, Tuft Withdrawal Tensometer, Pilfuz Carpet Tester, Usometer, Hexapod Tumble Tester, Courtaulds Tetrapod Walker [6]

UNIT – IV

Brief Description and principle operation of following Carpet Testing Equipments:

Digital Thickness Gauge, Portable Carpet Thickness Gauge, Drum Testing Device, Roller Chair Testing Device, Carpet Static Loading Device, Carpet Wear and Abrasion Tester, Types of Carpet Flammability Tester [8]

References:

1. **IWS Test Standard 1, 2, 3**
2. **Manuals of Carpet Testing of SDL & WIRA, U. K.**
3. **Carpet Manufacture by Crawshaw**

CHEMICAL PROCESSING OF CARPET L-T-P 0-0-3 ECT 651

1) Dyeing of woolen yarn with Levelling acid dyes,
2) Dyeing of woolen yarn with Milling acid dyes,
3) Dyeing of woolen yarn with chrome dyes,
4) Dyeing of woolen yarn with 1:2 Metal Complex dyes,
5) Dyeing of silk yarn with Levelling acid dyes,
6) Dyeing of silk yarn with 1:2 Metal Complex dyes,
7) Studies on fastness properties of Carpet yarn.
    a. Fastness to light
    b. Fastness to washing
    c. Fastness to rubbing
8) Studies on various kinds of carpet finishes.
9) Application of Latex coating on tufted carpets.
10) Analysis of effluent for TDS/TSS/pH Value etc. as per prevailing National Specification.

NOTE:
Whenever necessary practical classes will be conducted through visit to industry/ Research and academic institutions.

FABRIC MANUFACTURE – III (PRACTICAL) L-T-P 0-0-2 ECT 652

1. Fitting & tuning of 7 wheel take up motion.
2. To study the gearing of 7 wheel/ 5 wheel take up motion and to calculate the cloth take up per unit time.
3. Study of negative, semi positive and positive let off motion.
4. Fitting & tuning of loose reed motion & fast reed motion.
5. Study of various warp stop motion
    a. Mechanical,
    b. Electro mechanical, and
6. Study of various weft stop motions viz.
    a. Side Weft fork
    b. Centre Weft Fork.
7. To study the mechanism of changing shuttle in a multiple box loom.
8. To study the mechanism of changing pirn in an automatic loom.
9. Study of various parts of Dobby and Dobby Pegging Plan.
10. Study of various parts of Jacquard and Warp Selecting Mechanism.

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.

CARPET MANUFACTURING (PRACTICAL) - II L-T-P 0-0-3 ECT 653

1) To study various parts of handloom and their function.
2) To study various parts of a vertical carpet loom and their function.
3) Installation of handloom for durry and vertical carpet loom.
4) To study & identify the various types of knots used in handknotted carpet and also to determine knots/ square inch in a carpet.
5) Practical demonstration on handling of equipments used in manufacturing of hand knotted & hand-tufted carpet.
6) Practical demonstration on handling of equipments used in manufacturing of Indo-Tibetan & Broad Loom.
7) Acquaintance to KIBBY Carpet Sampling Machine and prototype development of handmade carpet (preferably portraits).

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.

CARPET TESTING (PRACTICAL) L-T-P 0-0-3 ECT 654

1. Determination of dimensional stability of carpet
2. Determination of carpet thickness using digital thickness tester
3. Measurement of pile height of carpet using leave gauge.
4. Determination of thickness of carpet under a given load vis-à-vis compressibility and % recovery by Digital thickness gauge.
5. Determination of thickness of carpet and carpet backing using portable thickness gauge.
6. Determination of Abrasion resistance and weight loss in carpet.
7. Determination of degree of appearance retention of a carpet.
8. Determination of blend composition of carpet
9. Determination of knots/sq" of a hand knotted carpet.
10. Determination of tuft withdrawal force using tuft withdrawal tensometer.

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.

Computer Aided Designing (Carpet & Textiles) L-T-P 3-1-0 EACT-701

Unit-1
Introduction of Computer Aided Designing – Importance and advantage of CAD, Features of CAD system. Interface elements, Transfer of designs to print paper: Various steps in transferring designs from sketch to Point paper [5]

Unit-2
Customizable settings, views, new designing creations, scanned photographs editing, File Utilities, Freehand tools, Geometric tool group, selection group, zoom group, selection utilities, General group [5]

Unit-3
Creating motifs in computer: drawing tools, motif scanning, scanning parameters, editing the image for graph making – scaling, rotating, reversing, convert to full methods of different style and forms of design using computer i.e. resize group, irregular scale, normal scale, covert to full, drop repeat, exchange horizontally, vertical exchange adjust repeat. [10]

Unit-4
Importance of color application in motif, colour utilities, colour protection, colour separation, transparent colour, change colours, colour reduction, colour reduction based on similarity. Tracing a graph/Design Plate Print out, wool consumption print out.

Colour Library – overview, creating new colour library DPI calculations. [10]

Unit-5

Preparation of computerized graph design from edited motif with suitable weaves, vector and raster images, x and y in designs, float control & float checking, pixel resolution and its relation with threads and thread per inch. Weave creation, creation of weaves and saving,

Jacquard designing, Principle of creating motifs in computer – drawing tools, motif scanning, scanning parameters, colours & attributes. [10]

Reference:

1. Manual for Autotex software (PLC consultancy)
2. User Manual for Texcells (Ned graphics)
3. Computer Aided Textile Design, II of HT, Salem (Manual
4. 2. Annual World, Computers in the world of textiles, Textile Institute, UK, 1984.Taylor P,
5. The Textile Institute. Winning through Information Technology, UK.
6. Berkstresser. Buhanan & Graddy, Automation in the Textile Industry: from Fibres to Apparels, The Textile institute, UK.1995
7. Veinsinet D O. Computer Aided Drafting & Design-Concept & Application, 1987
8. Phiroz Dastoor, " Application of CAD in the Industrial Fabrics ",Journal of the Textile Institute Part -111, Manchester, 1993.
9. Aldrich, W. (Ed), " CAD in clothing and textiles: A collection of experts view ",Blackwell Science, 2nd Edition, U.K., 1994.
10. Jayaraman, S., " Computer Science and Textile Science ", T.P.Vol.26, No.3, Textile Inst., Manchester, 1995.

Computer Aided Designing (Home Textiles, Pattern Making & Planning) EHTT 702

L-T-P 3-1-0

UNIT – I

a) Drafting and draping Techniques:-

Definition, Techniques, drafting and preparing basic Pattern for the standard measurements, Draping- Definition, preparation of furnishing form, Draping Techniques.

b) Flat Pattern Techniques :-

Definition, pivot, slash and spread method, measurement method Relocation of darts. Introducing fullness at various places**.** **[6]**

UNIT – II

a) Commercial Patterns: -

Commercial pattern **-**Definition, merits & Demerits, Selection of Commercial patterns.

b) Selection of Fabrics: -

Selection of fabrics for different furnishing Styles. Hints on handling of
different Fabrics such as slippery fabrics, Stripes, plaids, Checks, pile, fabric with up& down design [**6]**

UNIT - III

a) Lay Planning :-

Definition, Types of layouts, Economy of fabrics in placing patterns.
Adjusting fabrics to patterns**.**

b) Fabric preparations:-

Preparation of fabrics straightening, shrinking, pressing, study of grain
marking, transferring the marking and cutting the fabric, cutting different types of fabric. [**8]**

UNIT-IV

a) Pattern alterations:-

Pattern alteration, importance and general principles of pattern alteration and pattern for irregular figures.

b) Drafting pattern for Living Room Furnishings: -

Drafting pattern for (a) Cushion & Cushion covers (b) Curtains (c) Soft Toys (d) Bolster & Bolster cover (e) Wall Hangers (f) Sofa Cover (g) Lamp Shades (h) Bath mats (i) Towels (j) Upholstery (k) Durri (l) Carpets. [**8]**

UNIT –V

a) Drafting pattern for Soft furnishings for Bed Room:-

Drafting pattern for (a) Bed Cover & Bed Sheets (b) Pillow & Pillow cover (c) Mattress and Mattress covers and Pads (d) Gowns

b) Drafting pattern for Kitchen Soft Furnishings:-

Drafting pattern for (a) Kitchen Apron (b) Gloves (c) Table Cover (d) Table Runners (e) Bread Basket (f) Napkins (g) Kitchen Towels. **[10]**

Reference:

1. Zarapkar .K.S Zarapkar System of Cutting, Zarapkar Publishers.
2. Hedge .K.M, Scientific Garment Cutting, K.M.Hedge and Sons, Poona 1983.
3. Subramanian ,Dress Making ,Tailoring and Embroidery College,Bombay.1987
4. Readers Digest Sewing Guide – Complete Guide to Sewing - 13th edition ,The Reader's Digest Association Inc .Pleasant Ville, New York,1988
5. Aldrich, D metric Pattern Cutting For Children's Wear From 2-14 Years: BSP Professional Book .London .1989.
6. Mary mathews – Park – I – Designing drafting & tailoring.
7. 100 embroidery stitchbook.
8. Soft Furnishing – Home Sewing Library - Elaine Brumsteed
9. All about decorating your home - Roy Day
10. Designing Interior Environment - M.J. Alexander
11. Art in everyday life - Goldstein H & Goldstein V

Computer Aided Designing & Manufacturing (Textiles) ETDT-703

L-T-P 3-1-0

UNIT 1:

Introduction of computer application in textile designing – fundamentals – different methods and advantages of CAD, Transfer of designs to point paper: various steps in transferring designs from sketch to point paper, **[5]**

UNIT 2:

Design calculation as per given jacquard and harness set – its importance in CAD; Basics of computer designing-colours & colour palette-Colour Theory of Monitor and Printers, Pixel-resolution and its relation with threads and thread per inch – Vector and raster Images – X and Y in designing, Different drawing tools in CAD. Weave creation: Creation of Weaves and saving. Jacquard Designing: Principle of creating motifs in Computer- drawing tools, Motif Scanning, Scanning parameters, Colours & attributes.

Editing the Image for Graph making – scaling, rotating, reversing, dropping etc. **[10]**

UNIT 3:

Importance of Colour application in Motif – Colour masking & protecting (Picking of one Colour from more colours, Protecting of a colour from other colour), Repeat setting to see the joining; Methods of different style and forms of Design using Computer i.e Horizontal and vertical, all over designs, half drop & half Drop reverse designs. **[10]**

UNIT 4:

Preparation of computerised graph designs from edited motif with suitable weaves; Float control & Float Checking; printing of Graph Simulation and real Scale design, Comparison of Manual graph making & Computer aided graph making.

Computer aided Card punching – semi automatic and automatic punching Machine. **[5]**

UNIT 5:

Basics of CAD Printing:

Printing Designs – usage of CAD in Textile Printing; Editing of scanned Image by using different CAD Tools. Creation of Design direct on Computer screen by using CAD tools (Mouse / digitiser), Creation of Different textures with the helps of CAD. Incorporation of different Textures etc.

Arrangement & lay out of Motif to form Print Design. Design Calculation as per given parameters for print i.e. Size of screen, Number of screen etc. Colour Separation to make screen, Block etc. **[10]**

Reference:

2. Annual World, Computers in the world of textiles, Textile Institute, UK, 1984.Taylor P,
4. The Textile Institute. Winning through Information Technology, UK.

5. Berkstresser. Buhanan & Graddy, Automation in the Textile Industry: from Fibres to Apparels, The Textile institute, UK.1995
6. Veinsinet D O. Computer Aided Drafting & Design-Concept & Application, 1987
7. Phiroz Dastoor, " Application of CAD in the Industrial Fabrics ",Journal of the Textile Institute Part -111, Manchester, 1993.
8. Aldrich, W. (Ed), " CAD in clothing and textiles: A collection of experts view ",Blackwell Science, 2nd Edition, U.K., 1994.
9. Jayaraman, S., " Computer Science and Textile Science ", T.P.Vol.26, No.3, Textile Inst., Manchester, 1995.

Marketing & Merchandising of Carpet & Textiles L-T-P 3-1-0 EACT 704

Unit-I

Marketing concept; Strategic operations and international marketing; Retail Marketing; Basic concept of supply chain management **[8]**

Unit-II

Marketing strategies. Marketing Mix; Business plan; Functions of Strategic Business Units (SBU), **[10]**

Unit-III

Merchandising concept, function of a merchandise manager, retail management, types of retail store, need and objective of vendors, source of buying information, **[10]**

Unit-IV

Demand forecasting (qualitative and quantitative technique), Methods of Inventory Planning, steps in merchandise budgeting, Merchandise buying policies & practices [**6]**

Unit-V

Organizational communication and interpersonal techniques. Barriers in communication, Psychology of communication, Personal selling [**6]**

Reference

1. Principles of Marketing by Kotler
2. Retail Management by Ron Hasty & James Reardon, McGraw Hill Publication.
3. Rona Ostrow & Sweetman R. Smith, Dictionary of Retailing.
4. Lucas, Robert Bush & Lary Gresham: Retailing (Hononghton Miffin, AIPD, India).

Home Textiles-II L-T-P 3-1-0 EHTT 705

Unit – I

Brief introduction to clothing Industry. The Planning, Drawing and Reproduction of the Marker, the requirement of marker planning. Efficiency of the marker plan. The Spreading of The Fabric to from a lay. The requirement of the Spreading process. Methods of Spreading the Nature of Fabric Packages. [6]

The Cutting of Fabric, Objectives of cutting and methods of Cutting. Cutting Machine, Rotary Cutting Machine, Band Knife Cutting Machine, Special attachment care and maintenance common problems and their remedies. [4]

Unit II

Sewing Operation

The properties of seam, seam types, Stitch types, sewing machine Feed mechanisms ,Sewing machine , Needles .Sewing Threads ,Fiber type, Construction & Finish .Threads Sizing ,Tread Packages , Cost ,Properties and Seam performance ,

Sewing Problems Problem of Stitch Formation , Problem of Pucker, Problems of Damage to the Fabric along the stitch line, Testing for Sew ability and Tailor ability. [8]

Unit – III

a) Sewing Machinery: Basic Sewing Machines & associated work aids, Simple Automatics, Mechanized work places, Double needle machine, Over lock machine bar taking, Button hole making, button fixing, Blind stitching machine, Special attachment care and maintenance common problem and their remedies. [4]

b)The use of Components & Trims :- Labels and Motifs , Linings Interlining, Wadding ,Lace, Braids & Elastics , Hooks and Loop fastening Seam Binding & Tape , Shoulder Pad , Eyelets and laces, zip Fasteners , Buttons, Tack Buttons, Snap fasteners &Rivets performance properties of Components and trims. [6]

Unit –IV - Fusing:

Fusing definition, advantage of using Fusible interlinings, Requirement of fusing, fusing process, The Means of Fusing, Fusing equipments Methods of Fusing.

Quality Control in Fusing, Alternative of Fusing Interlining. [6]

Unit –V

Pressing

The purpose of Pressing, Categories of Pressing, the means of pressing, pressing equipments and methods, Pleating, Permanent press, the state of pressing. [6]

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. Interior Textiles Design and Developments by T Rowe, Woodhead Publishing
5. Related Journals, Magazines & Websites
6. Carpet-e-World Publications
7. Encyclopedia of Carpets by B. S. Chauhan
8. Advances in Carpet Manufacture by K. K. Goswami, Woodhead Publishing
9. Home Textile Today, U. K. based Journal

Trends in Textile Designing L-T-P 3-1-0 ETDT-706

1. Trends in woven designs [10]
2. Trends in knitted design [7]
3. Trends in printed design [8]
4. Trends in Textile colours. [7]
5. Trends in designing technology [8]

Reference:

1. Journals & Magazines

2. Color Forecasting Books

Carpet & Textile Designing L-T-P 3-1-0 ECT 707

UNIT –I
Classification of woven fabric, basic operations in woven cloth production, methods of fabric representation, Weave repeat unit, construction of drafts and lifting plants,
Plain weave and its derivatives (Warp rib weaves, Weft rib weaves and hopsack, mat or bosket weaves) [8]

UNIT –II
Simple or regular twill weaves, relative firmness of twill weaves, influence of the twist of the yarns, waved twills, herringbone twills, broken twills, transposed or re-arranges twills, elongated twills.
[8]

UNIT –III
Sateen/satin weave and its characteristics, crepe weaves, mockleno, cork-screw, honey comd, huck- a-back. [7]

UNIT –IV
Double cloths- Introduction, classification, self-stitched double cloths, interchanging double cloths.

Tapestry structures- Introduction, simple weft face tapestries, combined warp & weft tapestries. [8]

UNIT –V
Weft pile fabrics, terry pile structures, warp pile fabrics produced with the aid of wires, warp pile fabrics produced on the Face –To- Face principle. [7]

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

TEXTILE CHEMISTRY – IIIL-T-P 3-1-0 ECT 708

UNIT – I
Printing ingredients, Preparation of paste for printing- various thickening agents and their functions, auxiliaries, and other assistants including their function and uses.

Purpose of Steaming; Various Steamers and agers.

Different styles of printing e.g. Direct, Resist and Discharge, [6]

UNIT – II
Printing process for different fibres with direct dyes, acid dyes, sulphur dyes, vat dyes, azoic colours, reactive dyes, pigments, disperse dyes etc. Brief idea on function performed by the different pigment auxiliaries/assistants used in the printing paste. [6]

UNIT - III
Different methods of printing e.g.- screen, flat bed & rotary screen printing machineries and equipments.

Common printing faults their causes and remedies. [6]

UNIT – IV

Natural Dyes:

Importance of natural dyes in the present scenario. Classification of natural dyes. Significance of natural dyes in Carpet perspective. Limitations of natural dyes.

Preparation of raw material for dye extraction; extraction process of natural dyes and their standardization; Function of Mordants used for natural dyes and their application for various fibres. Process parameters for natural dyeing. Study on fastness properties of natural dyes. [8]

UNIT – V

Colour Theory:

Theory of colour, quantification of colours, CIE colour system colour difference, whiteness & yellowness in dyes, CIE lab formula, 555 sort. Application of spectrophotometer; Reflectance & Transmittance: K/S Curve, Theory of computer colour matching & colour forecasting. [8]

REFERENCES

1. Technology of Printing by Dr . V. A. Shenai
2. An introduction to Textile Printing by W Clarke.
3. Textile Printing by L.W.C. Miles.
4. Textile Printing Book of papers by Prof. R.B. Chavan.
5. Computer Colour Analysis: Textile applications by Dr. A.D. Sule.
6. Instrumental colour measurements and Computer Aided Colour matching for textiles by Dr.H.S. Shah & Dr.R.S. Gandhi.
7. Dyeing of Natural dyes on carpet wool and silk by IIT, Delhi.

ADVANCE CARPET TECHNOLOGY **L-T-P 0-0-3** ECT 751

1. To develop designs in Kibby Sampling Machine
2. To develop samples/designs in tufting machine
3. To visit mechanized carpet industry and prepare a technical report
4. Inter firm comparison on production cost of carpet using software like Carpcost.
5. Study and Application of Modern Backing Technology includes Snehabha in floor covering or such thick fabric materials
6. Study of various knots including India knots for cost effectiveness
7. Identification and Application of Natural fibres including unexplored vegetable fibres particularly
8. Study of Modern Handmade Carpet Weaving System including Cross Bar Horizontal Loom

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.

Home Textile Technology (Laboratory) L-T-P 0-0-3 ECT 751

1. Operation, cleaning and oiling the sewing machine.
2. Measurements of different articles for Home textiles
3. Acquaintance with different Types of Cutting Machine & their uses.
4. Acquaintance with fabric spreading & layering for Home textiles.
5. Practice of safety precaution in Cutting of fabric.
6. Sample Preparation for following Temporary stitches.
    - Basting – even
    - Uneven basting
    - Diagonal &. Slip stitch.
7. Sample Preparation for following Permanent stitches
    - Running

- Hemming
- Back stitch
- Run and back stitch
- Overcastting.
- Whipping stitch.

8. Samples preparation for Hand Sewing Embroidery Stitch.
    8.1. Samples on each type of stitches.
        a. Outline stitch
        b. Looped stitch
        c. Flat stitch
        d. Chained stitch
        e. Knotted stitch.
9. Sample preparation for Machine Embroidery stitches.
        a. Running stitch
        b. Granite stitch
        c. Cording stitch
        d. Braiding stitch / long & short.
        e. Satin stitch
10. Sample preparation for any 5 different types of trimmings

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 Design Technology (PRACTICAL) L-T-P 0-0-3 ECT 751

1. **Drawing and painting Equipments, Tools & their uses:**
   (i) a) Lead Pencils b)Charcoal c)Crayon d)Eraser e)Brushes f)Boards g)Board-Pins h)Different kinds of paper
   (ii) Application of Colours in different forms, to understand Perception, Harmony & fundamentals of colours
2. **Figurative Composition:**
   Ornamentation of fabric by using Colour Stripes & Checks, Spotted Patterns, Simple regular patterns, Simple irregular patterns
3. **Light & Pigment theory of colour,** Mixture of colour Pigments – Primary
   Secondary, Tertiary colours, Colour composition of Rainbow colours.

Methodology of Studio Work:

A considerable emphasis will be placed on active & continuing Sketchbook work depicting student-recording his/ her inspiration technique in further development of design etc.

All the drawings will be kept in appropriate form & sketchbook form, which will be an important part of continuity of practice between sessions of drawing & will be used for the assessment purposes.

7. Still Life drawings.
8. Drawing strokes exploration of natural objects.
9. Study of different form Layout of different forms to get look design.
10. To develop different forms for weaving/ Printing/Embroidery and Architecture etc.
11. Experimental use of variety of media such as Pencil, ink, spray techniques etc.
12. Study of Different Geometrical structures i.e. Line, Triangle, Circle, curve etc. & its impact on visualization & perception.
13. Exploration of forms, Shapes & line with in the natural forms or objects.

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.

EMERGING TECHNOLOGY L-T-P 3-1-0 EACT 801

Unit-I:
Identification of emerging Technologies in the field of fibers and brief acquaintance including Smart Textiles. [8]

Unit-II:
Identification of emerging Technologies in the field of yarn manufacturing and brief acquaintance. [8]

Unit-III:
Identification of emerging Technologies in the field of Carpet and Fabric Manufacturing and brief acquaintance. [8]

Unit-IV:
Identification of emerging Technologies in the field of Wet Processing and brief acquaintance. [8]

Unit- V:
Identification of emerging Technologies for application in the technical fields:

a) Protective Clothing,
b) Industrial Textiles
c) Medical Textiles,
d) Geo Textiles,
e) Textile for agriculture
f) Defence Textiles [8]

Reference Book:

1 Nano fibres and Nano technology by P Brown and K Stevens
2 Hand book of technical textiles by Mukhopadhyayand Partridge
3 Smart textiles for medicine and healthcare by Van Langenhove
4 Textile processing with enzymes by A Cavaco Paulo
5 High performance fibres by JWS Hearle
6 Related Journals, Magazines & Websites

Quality Control for Home Textiles L-T-P 3-1-0 EHTT 802

Unit – I:-
Introduction to Quality .Importance of Quality Managing Quality through inspection, Managing Quality through testing .Seven tools Of Quality Control. Current Concepts in Quality Management. [5]
Standard: - Introduction Benefits of Standards , Level of Standards ,
Sources of Standards, ISO 9000 Series standards, British and ISO Standard of Interest on Furnishing and Garment Manufactures. [4]

Unit – II
Inspections Techniques: - Raw Material Inspection, In process Inspection**,** Final Inspection. How much to inspect. Definition of Fabric Defects, Selection of Inspectors [3]

Unit – III - Textile Testing & Production Evaluation.
Precision & Accuracy of Test methods Atmospheric Conditions for
Testing , Strength Properties of apparel, fabric stretch properties , Dimensional Changes in Soft Furnishing due to laundering , dry cleaning ,steaming and pressing ,
durable press. Evaluation of Fabrics & Soft Furnishings. Needle cutting & Yarn severance, Sew ability of Fabrics, Bow & Skew ness, Fabric Distortion, Fabric streak, Soil / Stain Releasing Tests. [8]

Unit – IV - Textile Testing & Production Evaluation

Bonded & laminated furnishing Fabric, Testing of Fusible interlining.
Testing of Zippers, Elastics Waist band Testing Yarn Strength & Elongation, Sewing Threads, Buttons & Snap Fastness & Wear Testing, Flammability of Clothing, Textiles Flammability Testing Methods, Factors Affecting Fabric flammability. [10]

Unit-V: Shade Sorting & Care Labeling:-
Introduction to shade Sorting. Fundamental Color and color measuring,
Instrumental Shade sorting.
General Information in care labeling. American Care Labeling System, International care labeling System. British care labeling system. Canadian care labeling system. Japanese Care labeling system. [8]

Reference:
1. Managing quality control in apparel industry by P.V.Mehta & S.K.Bharadwaj, ASQC Quality Press, Newyork, 1998.
2 An Introduction to quality control for the apparel industry by P.V.Mehta, ASQC Quality Press, New York.
3. Principles of textile testing by J.E.Booth,C.B.S., publishers and distributers,New Delhi,1996

DESIGN MANAGEMENT L-T-P 3-1-0 ETDT- 803

Unit I

Difference between design and development, Aspects of home textiles design, Sources of design ideas / inputs, Design requirements pertaining to different countries, Product life cycle, Characteristics of industry during various phases of product life cycle [6]

Unit II
Design process, Design planning – Design output, Design inputs, Stages in design process, Selection of raw material and accessories, Customer involvement in design process, Inter phase in the design process [8]

Unit III
Design for manufacturing (DFM), Value analysis theory and application, Failure mode effect analysis (FMEA), Quality function deployment (QFD), Design and development system requirements as per ISO 9001:2000 [8]

Unit IV
Validation and verification of designs, Time management in designing, Basics of network analysis (PERT & CPM), Cost of design – Elements of cost, Standard costing methods [10]

Unit V
Presentation of designs, Design related records and their maintenance, Design catalogue – preparation, need and maintenance, Evaluation of performance of designs [8]

References:
Design Management by Brigitte de Mozota
Design Project Management by Griff Boyle

ADVANCES IN CARPET MANUFACTURING L-T-P 3-1-0 EACT 804

UNIT –I
Carpet types and requirements, structure and properties of carpet fibers & yarns [8]

UNIT –II
Advances in carpet weaving, developments in wool carpet manufacture, Cross bar horizontal loom [7]

UNIT –III
Developments in textile sports surfaces, reduction in static electricity in carpets, [7]

UNIT –IV

Developments in the thermal processing of carpets: Carpet yarn twist setting, carpet dyeing & finishing, latex curing, Snehabha carpet backing, energy consumption and management. [7]

UNIT –V

Developments in hand made carpets: History, carpet production in countries like India, Iran, Turkey, Nepal, China & Pakistan.

Key issues and stages in design, carpet materials, manufacturing techniques, key terms, carpet knots including India knot, eco-friendly & organic carpets including use of vegetable fibres, quality issues and customer's attitude.[8]

References:

1. Advances in Carpet Manufacture by K. K. Goswami, Woodhead Publishing
2. Encyclopedia of Carpets by B. S. Chauhan
3. Journals & Magazines
4. Carpet-e-World
5. Interior Textiles Design and Developments by T Rowe, Woodhead Publishing
6. Carpet Manufacture by Crawshaw
7. Tufted Carpet by Von Moody
8. Fundamentals of Carpet Maintenance by Eric M Brown

ADVANCES IN HOME TEXTILES L-T-P 3-1-0 EHTT 805

UNIT –I

Fundamental principles: Type of natural textiles used in interior, synthetic fiber for interior textiles. [8]

UNIT –II

Developments in interior textiles, Advances in joining fabrics for the future industry, Recent environmental perspectives on interior textiles. [8]

UNIT –III

Developments in flame retardant textiles material, Fibre testing of upholster furniture, current and possible future test methods. [8]

UNIT –IV

Interior application/case studies. [6]

UNIT –V

The use of textiles in carpet and floor covering. The role of textiles in indoor environmental problem **[6]**

References:

1. Interior Textiles Design and Developments by T Rowe, Woodhead Publishing
2. Related Journals, Magazines & Websites
3. Carpet-e-World Publications
4. Encyclopedia of Carpets by B. S. Chauhan
5. Advances in Carpet Manufacture by K. K. Goswami, Woodhead Publishing
6. Home Textile Today, U. K. based Journal

Advances in Textile Designing Technology L-T-P: 3-1-0 ETDT 806

Unit I

Introduction of Extra Warp & Weft Figuring, Backed clothes, Pique Fabrics [8]

Unit II

Damask, Basics of Distorted Thread Effects. Introduction of Brocade. [8]

Unit III

Uncommon Woven Structures:

Basic Principles of Lappet Weaving, Basic Principles of Swivel Weaving, Woven Pile Fabrics produced by Thermal Shrinkage, Tuck Fabrics [8]

Unit IV
Principle of Leno Structures.
Cloth Setting Theories. Quality Particular of Common Variety of Fabrics.
Analysis of Structure of Fabric with their Technical specifications [8]

Unit V
Construction & Development of Jacquard Designs:
Point Paper Designs, Development of Figures, Ground weave insertion, Design Drafting Composition of designs, Geometrical Ornamentation [8]

Reference:
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

ADVANCE FABRIC MANUFACTURING L-T-P 3-1-0 ECT 807

UNIT – I

Classification of non-woven fabrics A survey of the non-woven field – its uses and future growth Principles of web formation Fibre properties and their influence on properties of non woven fabrics Web geometry – fibre orientation, web density, their effect on properties of non-woven fabrics [8]

UNIT – II

Principles of needle-bonding Process variables and their effect on properties of needle bonded fabrics.

Brief idea of Stitch bonded fabrics, their manufacture and properties. Brief idea of spun bonded fabrics [8]

UNIT – III

Basic concepts of knitting:
Hand knitting to machine knitting, weft and warp knitting, knitting needles.
Weft Knitting:
Classification of weft knit structures, basic weft knitting machines including plain knit, circular rib, circular interlock and purl knitting machines, float and tuck stitches. Designing of weft knit structures [8]

UNIT – IV

Warp Knitting:
Basic warp knit structures, under lap and overlap.
Brief idea of the Working principal of Tricot & Rachel Machines Representation of warp knit structure.
Basic calculation of Production pertaining to the knitting machine [8]

UNIT –V
MODERN LOOM:
Rapier system of Weft insertion – flexible and rigid rapier. Tip transfer and loop transfer, weft control mechanism, Calculations pertaining production, efficiency. [6]

Reference:

1. N.N. Banerjee, Weaving mechanism Vol II, Published by Smt. Tara Banerjee & Apurba Banerjee, 29, Krishna nath Road, Behrampore-West Bengal, India
2. Marks & Robinson, Principles of weaving, The Textile Institute, Manchester
3. David J Spencer, Knitting Technology, Pergeman press UK
4. Terry Brackenbury, Knitted Clothing Technology, Blackwell Science

Publications.
5. Samuel Raz, Flat Knitting Technology, Germany.
6. Smirfitt, An Introduction to Weft Knitting, Merrow Publications.
7. Cegielka L, The knitting Industry: Present needs, future requirements, Vol 19, No.1, The Textile Institute 1988.
8. N.N. Banerjee, Non woven Manufacture, Published by Smt. Tara Banerjee & Apurba Banerjee, 29, Krishna nath Road, Behrampore-West Bengal, India
9. Oldrich Jirsak & Larry C. Wadsworth, Non woven Textiles, Carolina Academic Press, durham, North Carolina