

TEXTILE FIBRE PHYSICS [As Per Choice Based Credit System (CBCS) Scheme] SEMESTER - IV			
Subject Code	15TX41	IA Marks	20
No. of Lecture Hours/Week	04	Exam Marks	80
Total Number of Lecture Hours	52	Exam Hours	03
CREDITS - 04			
COURSE OBJECTIVES :			
This course aims at updating the knowledge of students in the following fields of fiber physics:			
<ol style="list-style-type: none"> 1. Basic concepts of fiber structure, properties and investigation of fiber structure 2. Basic concepts various mechanical, thermal, moisture, optical, electrical and frictional behavior of fibers. 			
Modules		Teaching Hours	Revised Bloom's Taxonomy (RBT) Level
MODULE - 1 Introduction to structure of fibers. Approaches to polymer fiber structure. List of parameters for reasonable specification of fiber structure analysis of solid state structure of textile fibres using DGC, X-rays, IRS, NMR, SEM and TEM. Study of two phase and one phase model of fibre physical structure		11Hrs	L1, L2, L4
MODULE - 2: Discussion on descriptive studies on of physical structure of Cotton, Wool, Silk, PET, Nylon and Acrylic fibres Moisture relations: Concept of moisture equilibrium, moisture hysteresis, moisture regain, heat of absorption, swelling of textile fibres. Effect of moisture on various properties of fibres. Calculations of Mr and Mc of fibres.		10Hrs	L1, L2,L4
MODULE - 3 Mechanical properties: Analysis of Stress and strain behaviour, Expression of results of tensile properties, factors affecting tensile behaviour, structure and tensile property correlation, Elastic recovery and weak-link effect. Stress relaxation, creep, factors affecting stress relaxation and creep. Dynamic mechanical properties and their applications.		11Hrs	L1, L2, L3,L4
MODULE - 4 Directional effects- Bending of fibers, Twisting of fibers, Shear modulus, Shear stresses and compression fiber masses. Frictional properties, Amonton's laws of friction, deviation of these laws in fibre friction. Nature of fiber friction, the friction of wool fibers		10Hrs	L1, L2, L3

<p>MODULE - 5 Introduction of Optical properties, measurement of birefringence, luster. Importance of optical properties Electrical properties: Electrical resistance, static electricity, dielectric properties and measurement of these properties.</p> <p>Thermal properties: Thermal conductivity, specific heat, thermal expansion and directional dependence of these thermal properties.</p>	<p>10Hrs</p>	<p>L1,L2, L3</p>
<p>COURSE OUTCOME</p> <p>1. This course work prepares students to face problems related to fiber behavior in various fields of textiles viz; Spinning, Weaving, Chemical processing and Garmenting.</p> <p>2. As this subject deals with most fundamental aspects of textiles (fibers), in-depth knowledge in this subject helps in carrying out any kind of research in textile and allied fields.</p>		
<p>Graduate Attributes (as per NBA)</p> <ul style="list-style-type: none"> ➤ Engineering Knowledge ➤ Problem Analysis ➤ Design/development of solutions (partly) ➤ Interpretation of data 		
<p>Scheme of Examination / Question paper pattern</p> <ul style="list-style-type: none"> • Two full questions (with a maximum of four sub questions) of sixteen marks each to be set from each module. Each question should cover all contents of the respective module. • Students have to answer five full questions choosing one full question from each module 		
<p>Text Book:</p> <ol style="list-style-type: none"> 1. Physical properties of Textile fibres, Morton & Hearle, J.W.S., TI, London, 2008. 2. Manufactured fibre technology, V.B.Gupta and Kotari V.K., Chapman & Hall, London. 3. Mechanical properties of polymers, Ward I.M., John wiley & sons, NY 1971. 		
<p>References:</p> <ol style="list-style-type: none"> 1. Mechanical properties of polymer, Neilson L.E., VolI,II, III, Marcel Dekkar, NY, 1974. 2 Polymer Characterization, Cambel and White, Chapman & Hall, London 1989. 3. Moisture relations in textiles, Hearle J.W.S., Textile Institute, London. 		

MANUFACTURED FIBRE TECHNOLOGY [As Per Choice Based Credit System (CBCS) Scheme] SEMESTER - IV			
Subject Code	15TX42	IA Marks	20
No. of Lecture Hours/Week	04	Exam Marks	80
Total Number of Lecture Hours	52	Exam Hours	03
CREDITS - 04			
COURSE OBJECTIVES			
This course aims at updating the knowledge of students in the following fields of manufactured fibre technology:			
<ol style="list-style-type: none"> 1. Fundamental aspects of synthetic fiber and production of commodity fibers like PET, Nylon, PT and PAN, 2. Studies on various high performance fibers 3. Post spinning operations in manufactured fibers and recent advances in manufactured fibers. 			
Modules		Teaching Hours	Revised Bloom's Taxonomy (RBT) Level
MODULE - 1 Introduction to synthetic fibres. List of synthetic fibres. Raw materials for production of PET. Study of production of PET by DMT & TPA routes - study of side reactions, degradation reactions during PET production. Description of Modification of PET fibres. Polypropylene fibres- production, use of various types of catalysts for Production of PP. Summary of properties of PET and PP fibres.		11Hrs	L1, L2
MODULE - 2 List of Polyamide fibres , Discussion on Production of polyamides, nylon-6 study of semi-continuous & integrated continuous process for Production of nylon-6, Production of nylon-66. Composition of N6-N66 production. Modification of nylon fibres. PAN fibres – introduction, Types, Different methods of Production of PAN polymer & Spinning of PAN fibres. Elastomeric fibres - origin, definition and production details.		10Hrs	L1, L2, L3
MODULE - 3 Introduction to high performance fibres. Classification of high performance fibres. Study of production of carbon, boron, silicon carbide, alumina & glass fibres. Study of Production of UHMWHDPE by GEL Spinning. Composites of various high performance fibres. Comparison of cut and stretch method.		10Hrs	L1, L2, L3
MODULE - 4 Define LCPS, Types of LCPS. Study of Production of aromatic polyamides viz. Nomex, Kevlar. Concept of liquid crystal, thermotropic & leotropic polymers fibres. Production and properties of PBZT and PBZO and aromatic polyester fibres. Study of drawing & heat setting of fibres. Study of tow to top conversion. Cut method, stretch – breaking method.		11Hrs	L1, L2, L3

<p>MODULE - 5 Need for texturing, Define texturing. Introduction to texturing. Study of different methods of texturing. False twist, draw texturing, Study of various parameters affecting false twist texturing. Airjet texturing, stuffer box crimping. Knife edge crimping, knit-de-knit crimping. Solvent texturing. Analysis of crimp rigidity. Physical bulk & instability of textured yarns.</p>	<p>10Hrs</p>	<p>L1, L2, L3, L4</p>
<p>COURSE OUTCOME</p> <ol style="list-style-type: none"> 1. This subject helps the students to acquire knowledge of synthetic fibres. 2. This subject prepares the students work in manufactured fiber plants in India and Abroad. 3. Subject also prepares and motivates the students to take up research work in field of manufactured fiber technology and technical textiles. 4. Students will be able to analyze characteristics of textured yarns. 		
<p>Graduate Attributes (as per NBA)</p> <ul style="list-style-type: none"> ➤ Engineering Knowledge ➤ Problem Analysis ➤ Design/development of solutions (partly) ➤ Interpretation of data 		
<p>Scheme of Examination / Question paper pattern</p> <ul style="list-style-type: none"> • Two full questions (with a maximum of four sub questions) of sixteen marks each to be set from each module. Each question should cover all contents of the respective module. • Students have to answer five full questions choosing one full question from each module 		
<p>Text Books:</p> <ol style="list-style-type: none"> 1. High Performance fibres, J.W.S.Hearle, Wood Head, UK-2005. 2. Synthetic fibres- J.E.McIntyre, J.W.S.Hearle, Wood Head, UK-1999. 3. Manufactured fibre technology, V.B.Gupta, Kotari V.K., Chapman & Hall, London, 1997. 4. Production of synthetic fibres, Vaidya A. Prantice Hall, New Delhi, 1985. 5. Textile yarns, Goswamy B.C., Wiley and Sons, NY 1980. 		
<p>References:</p> <ol style="list-style-type: none"> 1. Manmade fibres, Moncrief R.W., Wiley, NY 1975. 2. Manmade fibre science and technology, Mark Atlas, Vol.II and III, Wiley Intr.Sc. NT, 1967. 3. New fibres, T.Hongu, Ellis Horwood, Newyork, 1990. 4. Hand book of fibre Science and Technology, Levin, E.M.Pearce, J.Preston, Vol-3, Vol-4, Marcel Dekkar, New York, 1989 5. Carbon fibres, Donnet J.B., Bansol R.C., Marcel Dekkar, New York, 1990 		

SPINNING TECHNOLOGY – II			
[As Per Choice Based Credit System (CBCS) Scheme]			
SEMESTER - IV			
Subject Code	15TX43	IA Marks	20
No. of Lecture Hours/Week	04	Exam Marks	80
Total Number of Lecture Hours	52	Exam Hours	03
CREDITS - 04			
COURSE OBJECTIVES			
The objective of this Course is to explain the students the basic spinning process in Textile Industry such as Draw Frame, Comber and Speed frame. Students will acquire theoretical knowledge about the machineries used.			
Modules		Teaching Hours	Revised Bloom's Taxonomy (RBT) Level
MODULE - 1 Objects and principle of draw frame. Study of different drafting systems through sketches and name the types of draft in the draftingzone. Types of loading systems. Roller setting and procedure of roller setting. Auto levelers on drawframe. Study of long and short creel draw frames and their advantages and limitations. Brief study onbercolisation, scouring, buffing, roller eccentricity, shore hardness, calculations of draw frame such asproduction and efficiency.		11Hrs	L1, L2,L4
MODULE - 2 Modern developments in draw frame and specifications of the present day draw frame. Various qualitycontrol studies of draw frame such as wrapping procedure, Hank of sliver and coefficient ofvariation. Determine Hook theory and preparatory processes to comber. Objects of combing and study of combing cycle with the help of sketches and also indexnumbers. Detachment setting and its importance. Gauges used for setting the comber. Calculations incomber.		11Hrs	L1, L2
MODULE - 3 Various quality control studies of comber. Neps removal efficiency etc. Modern developments at comberand salient features of the present day comber. Objects of speed frame, study of different drafting systemsand importance of apron drafting system.Principle of twisting and winding in speed frame,		10Hrs	L1, L2, L3
MODULE - 4 Study of different types of flyers, building mechanism, lift, chase length and their importance. Study of differential gearing mechanism and its importance. Different types of change points at speedframe.		10Hrs	L1, L2, L3, L4

<p>MODULE - 5 Modern developments in speed frame and salient features of the modern speed frame. Study of various quality control studies such as hand determination, coefficient of variation. Calculations in speed frame.</p>	<p>10Hrs</p>	<p>L2, L3</p>
<p>Course Outcome On completion of this course, Students will be able to 1. Learn the various spinning processes carried 2. Gain knowledge about the machinery and Process Parameters of Draw Frame, Comber and Speed Frame 3. Will be able to describe the basics of spinning Technology</p>		
<p>Graduate Attributes (as per NBA)</p> <ul style="list-style-type: none"> ➤ Engineering Knowledge ➤ Problem Analysis ➤ Design/development of solutions (partly) ➤ Interpretation of data 		
<p>Scheme of Examination / Question paper pattern</p> <ul style="list-style-type: none"> • Two full questions (with a maximum of four sub questions) of sixteen marks each to be set from each module. Each question should cover all contents of the respective module. • Students have to answer five full questions choosing one full question from each module 		
<p>Text Books:</p> <ol style="list-style-type: none"> 1. Manual of Cotton Spinning, Coulson. A.F.W.(Ed.), Vol. I to IV. Textile Institute, Manchester, 1958. 2. Series on Textile processing, Zaloski.S., The Institute of Textile Technology, USA, Vol.I. (Opening, cleaning and picking). 3. Technology of short-staple spinning, Klein.W., Vol.I, II, III and IV, Textile Institute Pub., Manchester 1989. 4. Spun Yarn Technology, Oxtoby, Butterworths, London. 1987. 		
<p>References:</p> <ol style="list-style-type: none"> 1. Contemporary Textile Engineering, Happy. F. (Ed.), Academic Press, Inc., 1981. 2. Hand Book of Cotton Spinning, Taggart William, Universal Pub. Cor., 1979. 3. Essential Facts of Practical cotton spinning, Pattabhiraman T.K., Soumya Pub., Bombay, 1979. 4. Cotton Spinning Calculation, Soumya Pub., Bombay - 1979. 5. Cotton Opening & Carding, Merrill. G.R., Pub. G.R. Merrill, Lowell Mass, 1955. 6. Draw frame, comber, speed frame - NCUTE Pilot programme. 		

FABRIC MANUFACTURING TECHNOLOGY – II

[As Per Choice Based Credit System (CBCS) Scheme]

SEMESTER - IV

Subject Code	15TX44	IA Marks	20
No. of Lecture Hours/Week	04	Exam Marks	80
Total Number of Lecture Hours	52	Exam Hours	03

CREDITS - 04

COURSE OBJECTIVES:

- Define, Recognize & analyze The principles of weaving motions are the basics for the production of fabrics of all types
- Recognize, Demonstrate&analyze basic of weaving mechanisms. the basic concepts of looms, nomenclature of weaving terms, constructions & working of various motions settings & timings etc.

Modules	Teaching Hours	Revised Bloom's Taxonomy (RBT) Level
MODULE - 1 Introduction to Hand looms, power looms, automatic looms and shuttle less looms. Nomenclature of weaving terms. Basic motions in weaving. Shedding - Different types of shed. Positive and negative tappet shedding. Heald reversing mechanism. Staggering of healds, tappet shedding and their characteristics. Different types of tappets. Merits and demerits of tappet shedding, timing, setting, early and late shedding. Study of different types of reed, reed count. healds, heald count	11Hrs	L1, L2
MODULE - 2 Picking - Objectives of picking. Methods of picking, essentials of good picking, picking accessories cone over picking mechanisms setting & timings. Early and late picking in negative picking. Timing, setting of picking mechanism. Under picking mechanisms. Bowl and shoe under picking mechanism, side lever under picking mechanisms, side shaft under picking mechanisms, Timings & setting methods to alter the timing & strength of picking mechanism Shuttle checking devices for over & under picking mechanism. Swell mechanism reasons for shuttle trap. Beat-Up- Objects: Crank Beat up. Eccentricity of sley. Factors affecting the sley eccentricity. Cam beat-up mechanism.	10Hrs	L1, L2
MODULE - 3 Take up motion - Objects - types of Take up motions Intermittent, continuous Take up motion 5 wheel take up and 7 wheel take up motions, comparisons and dividend calculations. Continuous worm & worm wheel take up motion, anti-crack motion. Let-off motions – Types of let-off motions and negative let off : Break let off frictional rope or chain lever & wt let off motion construction & working, Positive let off : Basic requirements, advantages, Rapier, Toyoda, Ruti let	10Hrs	L1, L2, L3, L4

off mechanisms. Construction & working of electronic let off motion. Different types of back rests.		
MODULE - 4 Auxiliary Motions- Objects, Necessity & different types. Warp protector motions objects types - loose reed and fast reed. Electromagnetic warp protector - construction & working. Warp stop motions, drop wires – mechanical & electrical type. Weft stop motions - side weft fork and centre weft fork motions. Construction & working comparisons. Warp easing motions loom banging off.	11Hrs	L1, L2, L3,
MODULE - 5 Study of temples choice & suitability: Functions different types of temples. Defects caused by temples. Multiple box motions: weft patterning, 2x1, 4x1, 4x4 motions - construction & working. Automatic Looms - Different types - Cop changing, shuttle changing looms, feelers, types of feelers, shuttle eye cutters, temple eye cutters, construction & working. Fabric defects causes & remedies. Filament weaving: Loom modification & requirements. Speed and production calculations of plain looms.	10Hrs	L2, L3,L4
COURSE OUTCOME		
<ul style="list-style-type: none"> • Recall & Recognize the fundamentals of weaving different motions. • Recognize, Demonstrate & Analyze speed & working of different mechanism production calculation of looms. 		
Graduate Attributes (as per NBA)		
<ul style="list-style-type: none"> ➤ Engineering Knowledge ➤ Problem Analysis ➤ Design/development of solutions (partly) ➤ Interpretation of data 		
Scheme of Examination / Question paper pattern		
<ul style="list-style-type: none"> • Two full questions (with a maximum of four sub questions) of sixteen marks each to be set from each module. Each question should cover all contents of the respective module. • Students have to answer five full questions choosing one full question from each module 		
Text Books:		
<ol style="list-style-type: none"> 1) Principles of weaving mechanism by Robinson & Marks 2) Weaving mechanism, M.K.Talukdar. 3) Weaving Mechanism, Fox 4) Weaving mechanism, Bannerjee N.N. 		
Reference:		
<ol style="list-style-type: none"> 1. Weaving tablets, Textiles Association of India, Bombay, 1985. 2. Cotton weaving, Gordev. V and Volkov. P., Mir Pub., Moscow 1987. 3. Automatic weaving, Aitken, Colombia press, Manchester 1969. 4. An Introduction to Automatic weaving, Bennet G.A. - Colombia press, Manchester 1958. 5. Modern preparation and weaving machinery, Ormerod. A., Butterworth publication Co. 1993. 		

CHEMICAL PROCESSING OF TEXTILES – II
[As Per Choice Based Credit System (CBCS) Scheme]
SEMESTER - IV

Subject Code	15TX45	IA Marks	20
No. of Lecture Hours/Week	04	Exam Marks	80
Total Number of Lecture Hours	52	Exam Hours	03

CREDITS - 04

Course Objectives:

- To make students learn and understand the basics and advancements in dyeing processes in textile industry.
- To make the students exposed to various machinery employed for the above processes.
- To understand the chemistry of dyes and dyeing auxiliaries and their potential application for various textile fibre fabrics.
- To enhance the knowledge of students towards computer colour matching concepts, eco-friendly dyeing processes and natural dyes.

Modules	Teaching Hours	Revised Bloom's Taxonomy (RBT) Level
MODULE – 1 Introduction to Textile Dyeing: Classification of dyes and principles of dyeing. Chemicals and auxiliaries used for textile dyeing and their functions. Chemical constitution of dyes. Effect of fibre structure on dyeing behavior. Theories of dyeing. Action of electrolytes, effect of dye bath temperature, effect of material to liquor ratio, effect of dye bath pH, Modern concepts of dyeing and selection of dyes for specific end uses. Evaluation of fastness properties of dyed materials.	11Hrs	L1, L2
MODULE – 2 Chemistry, properties and application of dyes for Cellulosic fibres: Direct dyes – Classification, properties, application procedures, after treatments to direct dyed goods. Reactive dyes – Classification, properties, dyeing conditions, application procedures. Vat dyes - Classification, properties, dyeing conditions, application procedures. Sol-vat dyes - Classification, properties, dyeing conditions, application procedures. Sulphur dyes - Classification, properties, dyeing conditions, application procedures. Azoic dyes - Classification, properties, dyeing conditions, application procedures.	10Hrs	L1, L2
MODULE – 3 Chemistry, properties and application of dyes for Protein fibres: Acid dyes - Classification, properties, dyeing conditions and	10Hrs	L1, L2, L3

<p>application procedures. Basic dyes - Classification, properties, dyeing conditions and application procedures. Mordant dyes - Classification, properties, dyeing conditions and application procedures. Metal Complex Dyes - Classification, properties, dyeing conditions and application procedures. Introduction to natural dyes and their methods of application.</p>		
<p>MODULE – 4 Chemistry, properties and application of dyes for Synthetic fibres and their blends: Disperse dyes - Classification, properties, dyeing conditions and application procedures. Modified basic dyes - Classification, properties, dyeing conditions and application procedures. Various after treatments given to synthetic dyed goods. Concepts in dyeing of P/C, P/V and P/W blends</p>	10Hrs	L1, L2, L3, L4
<p>MODULE – 5 Garment Dyeing, Dyeing machinery and Concepts of Colour Matching: Preparatory process for garment dyeing, specialty chemicals and dyes used for garment dyeing. Different types of dyeing practices for various types of garments, precautions to be taken for effective dyeing of garments. Quality control in garment dyeing and garment dyeing machines. Working principles of dyeing machines for yarns and fabrics such as Winch, Jigger, Jet dyeing machines, HTHP dyeing machines etc. Latest developments in dyeing machinery. Introduction to colour measurement and computer colour matching concepts. Spectrophotometers and determination of K/S value, Yellowness, Whiteness and Brightness indices.</p>	11Hrs	L2, L3, L4
<p>COURSE OUTCOMES On completion of this course, students will be able to:</p> <ul style="list-style-type: none"> • Learn the chemistry of the various dyes and dyeing processes carried out in chemical processing department. • Gain knowledge about the dyeing machinery involved. • Understand the recipes used in dyeing of cellulosic, protein, synthetic fibres and blends. • Exposed to actual mechanisms involved in various dyeing operations and processes carried out in the industry. • Gain knowledge about latest developments in dyeing, dyes and auxiliaries, natural dyes etc. • Gain confidence to work in a dye house. 		
<p>Graduate Attributes (as per NBA)</p> <ul style="list-style-type: none"> ➤ Engineering Knowledge ➤ Problem Analysis ➤ Design/development of solutions (partly) ➤ Interpretation of data 		
<p>Scheme of Examination / Question paper pattern</p> <ul style="list-style-type: none"> • Two full questions (with a maximum of four sub questions) of sixteen marks each to be set 		

from each module. Each question should cover all contents of the respective module.

- Students have to answer five full questions choosing one full question from each module

TEXT BOOKS:

1. **Textile Preparation and Dyeing** – Asim Kumar Roy Choudhury, SDC, India, 2011
2. **Dyeing and Chemical Technology of Textile Fibres** - E.R. Trotman, Wiley, 1985
3. **Fundamentals and Practices in Colouration of Textiles** - J.N. Chakraborty, Woodhead Publishing India Pvt Ltd, 2010
4. **Handbook of Textile and Industrial Dyeing – Volume -1, Principles, processes and types of dyes.** Edited by M Clark – Woodhead Publishing Ltd. 2011
5. **Technology of Dyeing – Volume - 6 of Technology of textile processing**, V AShenai, Sevak Publications, Mumbai, 1984.
6. **Textile dyeing operations: chemistry, equipment, procedures, and environmental aspects** - Shrikant V. Kulkarni, Noyes Publications, 1986
7. **Textile Chemistry, Vol. III** – The physical chemistry of dyeing, R. H. Peters, Elsevier, Amsterdam, The Netherlands, 1975

REFERENCE BOOKS:

1. **Textile Auxiliaries and Finishing Chemicals**- ATIRA Publications.
1. **Modern techniques of textile Bleaching**- Dyeing, and Finishing, SITRA Pub.
2. **Chemical Processing of Cotton, Polyester Cotton Blends**- J.R.Modi and A.R. Garde - 1980, TAI Publications.
4. **Dyeing of Polyester Blends**- M L Gulrajani, 1980, TAI Publications.
5. **Principles and practice of Dyeing**- V A Shenai, 1993 Sevak Publications.

SPINNING TECHNOLOGY LAB-II

[As per Choice Based Credit System (CBCS) scheme]

SEMESTER – IV

Laboratory Code	15TXL46	IA Marks	20
Number of Lecture Hours/Week	01Hr Tutorial (Instructions) + 02 Hours Laboratory	Exam Marks	80
		Exam Hours	03

CREDITS – 02

COURSE OBJECTIVES

The objective of this Course is to describe the basic Practical spinning process of Textile Machineries such as Draw Frame, Comber and Speed Frame. Students acquire the Practical knowledge about the machineries used

Laboratory Experiments:**Revised Bloom's Taxonomy (RBT) Level****NOTE: The experiments are to be carried using discrete components only.****DRAW FRAME:****L1**

1. Passage of material through draw frame and list the parts and their functions.

2. Different types of drafting system and describe salient features of modern draw frames

L2

3. Break draft, main draft and total draft calculation.

L4

4. Production, delivery speed, calculation of hank of sliver, efficiency calculation of draw frame.

L4, L5

5. Setting of drafting zone and processing of material as per the hank required.

L4, L5, L6**COMBER:****L2, L3, L4**

6. Study of preparatory machines to comber. Study of one cycle of combing. Detachment setting and its importance. Setting of comber parts with the help of index numbers.

7. Production, speed, efficiency, draft calculation of comber.

L4

8. Working on comber. Demonstration of comber working.

L3

SPEED FRAME:	L2
9. Passage of material through speed frame. Explain different types of drafting system on speed frame.	
10. Break draft, main draft, total draft and draft constant calculations. Identification DCP to produce calculation to get different hank of roving on speed frame.	L2
11. Spindle speed drafting rollers speed calculations. TPI and twist constant calculations.	L4
12. Bobbin speed calculation with the help of differential gear mechanism. Building mechanism	L4
13. Production, delivery speed, hank of roving and efficiency calculations of speed frame and their demonstration.	L3, L4
14. Explanation of working of speed frame and setting of drafting roller.	L2, L5
COURSE OUTCOMES	
On completion of this course, Students will be able to:	
1. Learn the practical aspects of the machineries used	
2. Gain knowledge about the process parameters such as Settings, Speeds of Draw Frame, Comber and Speed Frame	
3. Will be able to define the actual running of the machineries	
Graduate Attributes (as per NBA)	
<ul style="list-style-type: none"> • Engineering Knowledge. • Problem Analysis. • Design/Development of solutions. 	
Conduct of Practical Examination:	
1. All laboratory experiments are to be included for practical examination.	
2. Students are allowed to pick one/two experiment from the lot.	
3. Strictly follow the instructions as printed on the cover page of answer script for breakup of marks.	
4. Change of experiment is allowed only once and 15% Marks allotted to the procedure part to be made zero.	

FABRIC MANUFACTURING TECHNOLOGY LAB-II

[As per Choice Based Credit System (CBCS) scheme]

SEMESTER – IV

Laboratory Code	15TXL47	IA Marks	20
Number of Lecture Hours/Week	01Hr Tutorial (Instructions) + 02 Hours Laboratory	Exam Marks	80
		Exam Hours	03

CREDITS – 02

COURSE OBJECTIVES

1. Students are exposed to various motions of weaving and acquire knowledge of setting and timing defects.
2. This subjects deals assembling and dismantling, working of all weaving machineries.
3. Students are given importance to calculate production, speeds calculations and quality control aspects.

Laboratory Experiments:**Revised Bloom's
Taxonomy
(RBT) Level****NOTE: The experiments are to be carried using discrete components only.**

1. Study of passage of material through loom, Calculation of loom speed	L5, L6
2. Dismantling, assembling, setting and timing of tappet shedding mechanism.	L2, L3, L4
3. Dismantling, assembling, setting and timing of cone over pick.	L2, L3, L4
4. Dismantling, assembling, setting and timing of cone under pick.	L2, L3, L4
5. Dismantling, assembling, setting and timing of Beat-up mechanism	L2, L3, L4
6. Dismantling, assembling, setting and timing of Take-up mechanism, calculation of dividend, PPI and pick spacing, anti crack motion.	L2, L3, L4
7. Dismantling, assembling, setting and timing of Let-off mechanism.	L5, L6
8. Dismantling, assembling, setting and timing of Loose-reed mechanism and Fast-reed mechanisms.	L2, L3, L4
9. Dismantling, assembling, setting and timing of side weft fork, and centre weft form motion.	L2, L3, L4

10. Drive for pick counter problems on pick counter reading and production, efficiency of loom.	L5, L6
11. Study of different types of box motions. Preparation of weft patterns and drop box chains to control box motions.	L5, L6
12. Weaving practice on Non-auto and box looms. Speed calculation and production calculation of automatic loom and plain looms.	L2, L3, L4
13. Demonstration, dismantling, assembling, setting, timing of cop changing and weft feeler mechanism in an automatic looms. Setting of feeler mechanism, shuttle protector motion, transfer hammer, shuttle eye cutter, temple eye cutter on automatic loom.	L1,L2, L3, L4
14. Demonstration, dismantling, assembling, setting, timing of warp stop motion and positive let-off motion in an automatic looms.	L5, L6
COURSE OUTCOME	
<ol style="list-style-type: none"> 1. Students acquire knowledge on various weaving motions, settings timings, production calculations and rapiers. 2. After acquiring knowledge in this subject, students will be able to work in various industry. 	
Graduate Attributes (as per NBA)	
<ul style="list-style-type: none"> • Engineering Knowledge. • Problem Analysis. • Design/Development of solutions. 	
Conduct of Practical Examination:	
<ol style="list-style-type: none"> 1. All laboratory experiments are to be included for practical examination. 2. Students are allowed to pick one/two experiment from the lot. 3. Strictly follow the instructions as printed on the cover page of answer script for breakup of marks. 4. Change of experiment is allowed only once and 15% Marks allotted to the procedure part to be made zero. 	

CHEMICAL PROCESSING OF TEXTILES LAB-II

[As per Choice Based Credit System (CBCS) scheme]

SEMESTER – IV

Laboratory Code	15TXL48	IA Marks	20
Number of Lecture Hours/Week	01Hr Tutorial (Instructions) + 02 Hours Laboratory	Exam Marks	80
		Exam Hours	03

CREDITS – 02**COURSE OBJECTIVES**

- To make the students gain practical knowledge about chemical processing operations especially the preparatory processes.
- To achieve perfectness in experimental skills and the study of practical applications will bring more confidence and ability to understand the recipes used in the operations such as desizing, scouring, bleaching and mercerizing.
- To develop practical exposure to machines used and the process conditions in achieving expected results in various chemical processing preparatory experiments.

Laboratory Experiments:	Revised Bloom's Taxonomy (RBT) Level
NOTE: The experiments are to be carried using discrete components only.	
1. Dyeing of Cotton yarn / fabric using direct dyes	L5, L6
2. Dyeing of Cotton yarn / fabric using reactive dyes (Procion M, H, HE Dyes, Ramazol dyes)	L2, L3, L4
3. Dyeing of Cotton yarn / fabric using Vat/ soluble vat dyes (IN, IK, IW Methods)	L2, L3, L4
4. Dyeing of Cotton yarn / fabric using Azoic colours	L5, L6
5. Dyeing of Cotton yarn / fabric using Sulphur dyes	L5, L6
6. Dyeing of silk with acid and basic dyes	L2, L3, L4
7. Dyeing of silk with metal complex dyes	L5, L6
8. Dyeing of acrylic using basic dyes	L2, L3, L4

9. Dyeing of polyester using disperse dyes with carrier, HTHP and Thermosol dyeing technique	L2, L3, L4
10. Dyeing of garments with various classes of dyes	L5, L6
11. Dyeing of cotton, silk and wool using important natural dyes	L5, L6
12. Determination of K/S and matching of shades using spectrophotometer	L5, L6
13. Analysis of dyes, chemicals and auxiliaries	L5, L6
14. Measurement of washing / rubbing fastness of dyed goods	L2, L5, L6

COURSE OUTCOME

- The students will be able get hands on experience of dyeing of different classes of fibres, fabrics and garments
- They will get experience on various dyeing equipment, settings and handling.
- The students will be exposed to work on computer colour matching instruments and related software.

Graduate Attributes (as per NBA)

- Engineering Knowledge.
- Problem Analysis.
- Design/Development of solutions.

Conduct of Practical Examination:

1. All laboratory experiments are to be included for practical examination.
2. Students are allowed to pick one/two experiment from the lot.
3. Strictly follow the instructions as printed on the cover page of answer script for breakup of marks.
4. Change of experiment is allowed only once and 15% Marks allotted to the procedure part to be made zero.