MMFT, SYLLABUS
Uttar Pradesh Textile Technology Institute, Kanpur
affiliated to
DR.A.P.JABDULKALAMTECHNICALUNIVERSITY,LUCKNOW

PROPOSEDSTUDY&EVALUATIONSCHEMEF
OR
3RDB.TECH.

MANMADE FIBRETECHNOLOGY

On

AICTEB.TechModelCurriculumStructure (MCS)

(EffectivefromtheSession:2024-2025)

Study&EvaluationScheme(MCS)
3rd Year B. Tech Man Made Fibre TechnologyUttar Pradesh Textile Technology Institute KanpurAffiliatedto
DR.APJABDULKALAMTECHNICALUNIVERSITY, LUCKNOW

3rdYearV-Semester **EffectivefromSession-2024-2025**

Sl. No.	Subject Codes	Subject	Periods			EvaluationScheme				EndSemester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	BTT508	Post Spinning Operation	3	1	0	30	20	50		100		150	4
2	BTT509	Polymer Science	3	1	0	30	20	50		100		150	4
3	BTT503	Chemical Processing of Textile-I	3	1	0	30	20	50		100		150	4
4	BTT051/BTT052/BTT059	Structure & Properties of Fibres/ Multi & Long Fibre Spinning/ Spinning of Manmade fibres & Blend	3	0	0	30	20	50		100		150	3
5	BTT054/BTT060	Non WovenTechnology/Texturedyarn Technology	3	0	0	30	20	50		100		150	3
6	BTT558	PostSpinningOperation Lab	0	0	2				25		25	50	1
7	BTT559	PolymerScienceLab	0	0	2				25		25	50	1
8	BTT553	ChemicalProcessingof Textile-ILab	0	0	2				25		25	50	1
9	BTT554	MiniProjectorInternship Assessment*	0	0	2			50				50	1
10	BNC501/ BNV502	Essence of IndianTraditionalKnowledge/Constitution ofIndia	2	0	0	15	10	25		50			
11		MOOCs(Essentialfor Hons. Degree)											
		Total	**17**	**3**	**8**							**950**	**22**

***TheMiniProjectorinternship(3-4weeks)conductedduringsummerbreakafterIIsemesterandwillbeassessedduringIIIsemester.

- EssenceofIndianTraditionalKnowledge/ConstitutionofIndia,shallbedonebyonlinecourses

Study&EvaluationScheme(MCS)
3rd Year B. Tech Man Made Fibre TechnologyUttarPradeshTextileTechnologyInstitute Kanpur Affiliatedto
DR.APJABDULKALAMTECHNICALUNIVERSITY, LUCKNOW

3rdYearVI-Semester **EffectivefromSession-2024-2025**

Sl. No.	Subject Codes	Subject	Periods			EvaluationScheme				EndSemester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	BTT604	PhysicalTestingofTextiles	3	1	0	30	20	50		100		150	4
2	BTT607	FabricStructure&Design	3	1	0	30	20	50		100		150	4
3	BTT603	ChemicalProcessingof Textile-II	3	1	0	30	20	50		100		150	4
4	BTT061/ BTT062	TheoryofTextileStructure/ ClothingScience	3	0	0	30	20	50		100		150	3
5	EOE061-066	OpenElective-I	3	0	0	30	20	50		100		150	3
6	BTT654	Physicaltestingoftextile Lab	0	0	2				25		25	50	1
7	BTT657	FabricStructure&Design Lab	0	0	2				25		25	50	1
8	BTT653	ChemicalProcessingof Textile-IILab	0	0	2				25		25	50	1
9	BNC601/ BNC602	Essence of IndianTraditionalKnowledge/Constitution ofIndia	2	0	0	15	10	25		50			
10		MOOCs(Essentialfor Hons.Degree)											
		Total	**17**	**3**	**6**							**900**	**21**
EssenceofIndianTraditionalKnowledge/ConstitutionofIndiashallbeconductedthroughNPTEL(MOOCS)													

OpenElective-I:AsperAKTUSyllabus

SYLLABUS

Uttar Pradesh Textile Technology Institute, Kanpur

Affiliated to

DR.A.P.JABDULKALAMTECHNICALUNIVERSITY,LUCKNOW

PROPOSEDSTUDY&EVALUATIONSCHEMEF
OR
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On

AICTEB.Tech Model Curriculum Structure (MCS)

(Effective from the Session: 2024-2025)

3rd B.Tech (TextileTechnology)5th Semester

1. Post Spinning Operation BTT508 (LTP:310)Credit4

CO1	Defineandexplaindifferentfundamentalterminologiesrelatedtopostspinning operationsforsyntheticfilament yarns.
CO2	Describeprinciplesdrawingoperationsandfunctioningofthemachinesanddifferent methods,explain effect ofdrawingon fibreproperties.
CO3	Analyseeffect of heatsettingon propertiesofthefibre, classifydifferent techniques and differentiatethem.
CO4	Stateobjectivesofcrimpingandstretching,Explainandcomparevariousoperationofstretchbreakingtowtoconversionscrimpingelaboratetheirimportanceintextile processing.
CO5	Describeprinciplesoftwistsetting;explainimportanceofprocessvariableandmeans tocontrol qualityandevaluation usingseveralcharacterizingtechniques.

Course Articulation Matrix of Post Spinning Operation:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
KMMFT508.1	3	3	3	3	2							2
KMMFT508.2	3	2	3	3	3	2						2
KMMFT508.3	2	3	2	3	2						1	1
KMMFT508.4	2	3	2	2	3							1
KMMFT508.5	3	2	3	3	2	2						2
Avg.	3	3	3	3	2	2						2

Unit(1): Conceptofdrawing,drawingunitFactorsinfluencingdrawability,Influenceofdrawing on structure and properties of fibres. Methods used for orientation stretching- singlestage, multi stage, drawing of melt spun filaments, drawing of as-spun fibres through neckformation.**Total oflectures required=9**

Unit (2); Heat setting, nature of heat set, Influence of heat setting variables on structures &propertiesoffibres,Temporary,semi-permanentandpermanentheatsetting,heat–settingequipment. **Total oflectures required=9**

Unit (3): Tow to top conversion, stretch breaking, cutting method, Sydel stretch breaking,Pacific tow to top cutting system, Effect of process variables in Pacific system, Turbo stapler.**Totaloflectures required=9**

Unit (4): Needforcrimping,crimpingmethods,manufacture ofhighandvariableshrinkfibres,twisting of continuous filaments, up twisters and two for one twister. Developments in Twisters**Totaloflectures required=8**

Unit(5):Twistsetting,Systemsusedconversionoffibresintoyarn,influenceoffibreandprocessvariables on propertiesofblendedand multifilamentyarns.
Total of lectures

required=7Grandtotallecturesreq

uired=42

TextBooks &Referencebook:-

1. ManufacturedfibretechnologybyV.B.Gupta&V.K.Kothari.
2. Production of Synthetic Fibres - A. A. Vaidya
3. Textile fibres: Development and innovations, VK Kothari, IAFL Publication, New Delhi
4. Hearle, J. W., Hollick, L., & Wilson, D. K. (Eds.). (2001). Yarn texturing technology..
5. Man-made Fibres - R. W. Moncrieff

2. BTT-509 Polymer Chemistry(LTP310)Credits4

Unit(1) ScopeofPolymerChemistry,definitionofmonomers,Degreeofpolymerization,Classification of Polymers, , macromolecule, Chemistry of important monomers , Thermo sets ,Thermoplastic.Essentialand desirable propertiesforfibreformingpolymers.
TotalLecturesRequired=10

Unit (2) Condensation polymerizations with special reference to Textile based Polymers,Types,Mechanism,Essentialrequirements,Importanceofcondensationpolymerization.Bulk,Solution, Emulsion and Suspension polymerization, Comparison of condensation and additionpolymerization.
TotalLecturesRequired=8

Unit (3): Addition polymerization with special reference to Textile based Polymers, (b) Type ofaddition polymerization, (c) Radical polymerization with special reference to PAN, cationic andanionic polymerization (d) Mechanism and kinetics of polymerization, Essential requirements,Importanceof Addition polymerization.**Total Lectures Required= 8**

Unit(4):TotalLecturesRequired=8
Copolymerization,Stereo-Regularpolymerization,BlockandGraftpolymerization.Gelpolymerization,Hypotheticalmodelsrelatedtotextilefibres(LikeShiesh-Kebab,fringedfibrillar,fringed micellarmodels etc, Elastomers.

Unit(5): Polymermolecularweightcharacterization.Functionality,End-Groupanalysismethod,Viscositymeasurementmethods,Gelpermeablechromatography(GPC)Techniques.Lightscatteringmethod,Massspectroscopy,Gasspectroscopy,RamanSpectroscopy,FTIRtechniques,ElementalanalysisusingInductivelycoupledPlasmaSpectroscopyand Atomicabsorption spectroscopy.

TotalLecturesRequired=8
GrandTotalLecturesrequired=42

TextBooks&ReferenceBooks:

1. TextBookofPolymersciencebyF.W.Bill Meyer
2. Bhatnagar, M. S. (2004). A Textbook of Polymer Chemistry. S. Chand Publishing.
3. Polymer science. Gowariker, V. R., Viswanathan, N. V., & Sreedhar, J. (1986). New Age International.
4. PolymerchemistrybyB.K.Sharma
5. Hearle, J. W. (1982). Polymers and their properties (Vol. 1). E. Horwood.
6. Flory, P. J. (1953). Principles of polymer chemistry. Cornell university press.
7. Odian, G. (2004). Principles of polymerization. John Wiley & Sons.

3. Chemical ProcessingofTextile-I(BTT503)Credit4

CourseOutcomes:
Aftersuccessfulcompletionofthiscourse,thestudents shouldbeableto:

CO1	Explainvariousmechanicalandchemicalpre-treatmentprocesses, Discussmethodsof singeing,desizing andscouring. Evaluateefficiencyof desizingand scouring
CO2	Explainandcomparevariousbleachingprocessesforvarioustextilefibres,andevaluate efficiencyofbleaching.
CO3	Describemercerizationofyarnsandfabricsofcellulosicmaterials,,comparevarious methods,evaluatedegree ofmercerization.
CO4	Discussandcomparevariousmechanicalfinishingsuch asSanforizing, callendering, raising,milling,stenteringetc.withsuitablemachineries.
CO5	Explainutilityandapplicationmethodsofvariousphysicalandchemicalfinishessuch asresinfinishing,anti-crease,wash-n-wear,durablepress,Heatsetting,weightreduction, soilrelease,waterrepellentandflameretardantfinishes.

CourseArticulationMatrixof ChemicalProcessingofTextile-II:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
BTT-503.1	2	3	2	3	2							2
BTT-503.2	3	2	3	3	3							1
BTT-503.3	3	3	3	3	2							2
BTT-503.4	3	3	3	2	3							1
BTT-503.5	2	2	3	2	2							2
Avg.	3	3	3	3	2							2

ModuleI (10Hours)

Introduction:Processlineforpretreatment,colorationandfinishingoftextiles.

Singeing: Objective, classification of singeing methods, advantages and drawbacks. Process andqualitycontrol aspects involved.

Desizing: Objectives, classification and mechanisminvolvedin removal of size contentinvarious methods. Desizing of natural and man-made fibres. Evaluation of desizing efficiency**Scouring**: Objectives, mechanism involved in removal of impurities, recipe and controllingparameters involved.Scouringofnatural,manmade andblendedtextiles.Carbonisationofwool.Degummingof silk. Evaluationofscouringefficiency.

ModuleII (10Hours)

Bleaching: Objectivesofbleaching,hypochlorite,peroxide,chloriteandperaceticacidbleachingmethodsofbleaching.Mechanisminvolvedineachtypeofbleachingwithcontrolling parameters.Bleachingofcotton, silk, wool, man-madefibresand blended textilesbysuitablebleachingagents. Optical whiteningofcotton. Tests forbleaching.

Mercerization: Objectives, mechanism and process parameters of hot and cold mercerization.Causticization.Brief idea of ammoniamercerization. Evaluationof mercerization

Heat setting : Objectives, mechanism and methods of heat-setting. Effectiveness of heat settingon various man made textiles and blends. Heat setting conditions and controls. Heat setting ofpolyester,nylon,acetate and theirblends.Evaluationofdegreeof heat setting.

ModuleIII(10 Hours)

Conceptofcolour:Visiblespectrum,wavelengthandblindnessofcolour.Metamerism/isomerism.Additiveandsubtractivetheories.Primary,secondary,tertiary,complementary and contrasting colors, shade, tint, Hue, chroma, color wheel. Tristimulus valuesof colour. Computer colour matching, kubelka-munk equation, reflectance factor, colour-co-ordinates,CIELABvalues.

Theory of dyeing: Introduction to thermodynamics and kinetics of dyeing. Classification ofdyes.Basiccharacteristicandchemical structureof dyes.Dye-fibreinteraction

DyeingoftextilesCellulosicandProteinfibres:ApplicationofDirect,Reactive,Vat,Solubilized vat, Sulphur, Azoic dyes on cellulose fibres. Application of Acid, Basic and Metalcomplex dyes on wool and silk. Auxiliaries used in dyeing. Eco friendly chemicals and banneddyes.

BooksRecommended:

1. KarmakarS.R.,—ChemicalTechnologyinthepretreatmentprocessingoftextiles,TextileScience &Technology,Elsevier Publication, 1999.
2. Trotman, E.R., —Dyeing and Chemical Technology of Textile Fibres, CharlesGriffinandCo.Ltd.,London.1991.
3. Shenai, V.A. —Technology of Bleaching and Mercerizing - Vol. III, Sevak PublicationsChennai,1991.
4. BhagwatR.S—HandbookofTextileProcessing,ColourPublication,Mumbai,1999.
5. Shenai,V.A.,—PrincipleandPracticeofDyeing, SevakPublisher,Bombay,1991.
6. T.L.Vigo,—TextileProcessingandProperties,Elsevier,NewYork,1994.

DepartmentElectiveI:

Structure and Properties of Fibres (BTT051) (L T P 3 0 0) Credit

3CourseOutcomes:after completion of coursestudents willbeableto

CO1	Describe various models of physical structure of fibre and Analyse structure–propertyrelationship.
CO2	Explainvariouspropertiesoffibres.
CO3	Characterizeandmeasurevariousphysicalandchemicalstructureoffibresbyusinginstrumentaltechniques.
CO4	Derive various mathematical models of fibre structures and
CO5	properties.Determinethe effectsofdifferent factorsinfluencingfibreproperties.

CourseArticulationMatrixofStructureandPropertiesof fibers:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
BTT-051.1	3	3	3	2	2							2
BTT-051.2	3	2	3	3								2
BTT-051.3	3	3	2	3	3							2
BTT-051.4	2	3	3	2	2							2
BTT-051.5	3	3	1	1	2							1
Avg.	3	3	3	2	2							2

Unit(1):
Physical and chemical structure of cotton, wool, silk, and manmade textile fibres, models of finestructure of fibre, Methods of investigation of physical structure by IR spectroscopy, FTIR, andX-raydiffraction. Measurement of densityandcrystallinitybydensitygradient column.
TotalLecturesRequired=8

Unit(2):
Moisture regain and content. Significance of moisture in textiles. Relation between regain andrelative humidity, hysteresis of moisture absorption, effect of various factors on moisture regain.Difficulties involved in drying of textile specimen. Heat of sorption and heat of wetting, theirrelationship,swellingoffibres, Quantitative theoryofmoistureabsorption.
TotalLecturesRequired=8

Unit(3):
Tensilepropertiesoffibre,Factorsaffectingresultsoftensileexperiment,experimentalmethods; effect of variability and weak-link theory, Elastic recovery, Effect various factors onrecovery, Cyclic loading and fatigue, Fibre fracture. Time effect, Creep and stress relaxation.Dynamic testing. Concept of viscoelastic effects, Kelvin and Maxwell model. Bending andtorsional rigidityof fibre.
TotalLecturesRequired=8

Unit(4):
ThermalbehavioroftextilefibresbyDifferentialScanningCalorimeter(DSC),Thermo-gravimetric analysis (TGA), thermal mechanical analysis (TMA), and Dynamic MechanicalAnalysis(DMA), Optical and electron microscopy
TotalLecturesRequired=8

Unit(5):
Opticalpropertiesoffibres,DefineRefractiveindexanddichroicratio.Birefringenceandorientation of fiber. Reflection and lustre. Electrical and dielectric properties, fibre friction,Measurement of fibre to fibre, yarn to yarn friction. Generation of static charge in textiles,variouseffects of staticcharge, measurementandcontrol.
TotalLecturesRequired=8

GrandTotal oflecturesrequired= 40

ReferenceBook:-

1. MortonW EandHearleJW S,PhysicalPropertiesofTextileFibres,1streprint,TheTextile Institute, Manchester, 1986.
2. GuptaVBandKothariVK,"ManufacturedFibreTechnology"1stEd.,ChapmanandHall,L ondon, 1997.
3. HearleJWS,Polymersandtheirproperties, Vol.I,JohnWileyandSons, NY,1982.
4. TuriEA"Thermalcharacterizationofpolymericmaterials",Vol Iand II, AcademicPress,1997.
5. Gedde,U. L.F.(1995).Polymerphysics.Springer Science&BusinessMedia.
6. Billmeyer FW,"Text bookofpolymer science",JohnWileyandSons,1984.
7. MeredithR,TheMechanicalPropertiesofTextileFibres,NorthHollandPublishingCo;Amste rdam1959.

Multi &LongFibreSpinning(BTT052) (LT P3-0-0=3)Credit3

CourseOutcomes:

Afterthis coursestudents willbe ableto

CO1	Explainthecriticalparameterdifferenceinprocessingoflongfibres
CO2	Explain theprocess condition&needfordyedfibres processing
CO3	Explain the machine used for spinning wool fibres & blends using woolen & worstedsystem
CO4	Explaintheprocesssequence forjutefibre processing.
CO5	Applymeasures for processcontrol duringjute, wool &otherlongfibrespinning

CourseArticulationMatrixforMulti&Long FibreSpinning

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
BTT-012.1	3	3	3	2	2							2
BTT-012.2	3	2	3	3								2
BTT-012.3	3	3	2	3	3							2
BTT-012.4	2	3	3	2	2							2
BTT-012.5	3	3	1	1	2							1
Avg.	3	3	3	2	2							2

Unit1: Characteristicsofmanmadefibres,Spinnability,blending,anditsobjectives,Spinnability, blending & its objectives, processing of Man- made fibres & blends on short,mediumand longstaple spinningsystems.

TotalLecturesRequired=8

Unit 2: Spinning of dyed fibres, estimation ofblends intimacy, factors affecting the blendirregularity,structural properties ofblendedyarns.
TotalLecturesRequired=8

Unit3:Productionofbulkedyarn,characteristicdifferenceinthephysical&mechanicalproperties of various long staple fibers& their influence in the choice of preparatory & spinningmachinery.
TotalLecturesRequired=8

Unit 4: Retting of flax, & jute, Jute & flax spinning processes, production of spun silk, varieties,technologyand applications.
TotalLecturesRequired=6

Unit5:Woollen,semi-worsted&worstedsystemsofspinning.Technologyinvolvedandcomparison,varieties,applications and end uses.
Total Lectures Required = 6Grandtotallecturesrequired=36

Referencebook:-
1. Wool SpinningbyVickerman, Abhishek Publication
2. Principleof woolenspinningbyPriestman
3. Woolen &Worstedyarn manufacturebyJ. W.Redcliff
4. JuteSpinningCalculation byAndrew Smith
5. Worsted Drawing&SpinningbyMiles

SpinningofManmade FibresandBlends(BTT059) LTP300Credit3

Unit1:
Introductiontospinningsystems,Overviewandclassificationofmanmadefibres,blendingandmixing, conditioning,toppling, Migrationoffibres,Mechanisms ofBlending.
No.oflecturesrequired:9

Unit 2: Properties of manmade fibres, effect on spinning, spinning of short, medium and longfibres, general settings of machines at different stages, factors affecting processing of dyedfibres.
No.oflecturesrequired:9

Unit 3: Processingof synthetic fibres in different spinning systems such as Ring, Rotor andAirjet etc. effect of process parameters and comparison of different yarn quality parameters,propertiesofringspun blendedyarns.

No.oflecturesrequired:10

Unit 4: Spinning of manmade fibres on woolen and worsted systems, introduction to woolen,worsted,semiworstedspinningsystems,towtotopconversion,scouring,gilling,rollercards, combingetc.

No.oflecturesrequired:6

Unit5: Sewingthreads,requirementofsewingthreads,processingofmicrofibers,andproductionoffancyyarns andrecentdevelopments in theindustry.

No.oflecturesrequired:6

Refrences:

1. SpinningofManmadesandBlendson CottonSystem.–KRSalhotra.
2. SpunYarnTechnology.-EricOxtoby.
3. FundamentalsofSpunYarnTechnology.-CarlA.Lawrence.
4. TextileYarns:Technology, Structure,andApplications.–BhuveneshChandraGoswami, J.G.Martindale,F. L.Scardino.
5. WoolSciencebyWHSimpson and G HCrawshaw.

DepartmentElectiveII:

NonWovenTechnologyBTT054 (300)Credit 3

Aftersuccessfulcompletionofthiscourse,thestudentsshouldbeableto;

CO1	Describeonwovenmarket&classificationofnon-woven
CO2	Explainthedifferentmethodsofnon-wovenmanufacturingprocessesanddescriptionofnon-wovenmachines.
CO3	Explainpropertiesoffibresrequiredfornon-woven,structureoffibersinnon-woven&non-wovenfabric properties&theirapplication.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	3	3	2	2							2
2	3	2	3	2								2
3	3	3	2	2	2							2
Avg.	3	3	3	2	2							2

Unit 1: National and international scenario on non-woven fabric production, Concept about feltsandnon-woven,Classificationofnon-wovenfabrics,fibresfornon-wovenfabrics,FeltManufacturingprocess**Total Lectures Required =9**

Unit 2: Various method of web formation, web characteristics and their influence on propertiesof non-woven fabrics, (3) Non-woven fabric by Needle punch, Description of needle punchingmachine,effectofprocessvariablesonpropertiesofneedlepunchfabric**TotalLecturesRequired=9**

Unit 3: Non-woven fabric by hydro entanglement, Description of hydro entanglement machine,effect of process variables on properties of hydro entanglement non-woven fabric, Non-wovenfabric by adhesive bonding, mechanical bonding, Melt blown processof non-woven fabricmanufacturing.**TotalLectures Required =8**

Unit 4: Non-woven fabric by Stitch bonding, Non-woven fabric by chemical bonding, Non-woven fabric by bonding with thermoplastic adhesives, Non-woven fabric by Spun laced, Effectof process variables on properties of stitch bonding, chemical bonding spun laced non-wovenfabrics.**Total LecturesRequired =8**

Unit5: Flockedfabric,Laminates,latestdevelopmentinnon-wovenindustry:ultrasonicbonding, Infra-red bonding, bonding by bi-component fibres. Application of various non wovenfabrics
TotalLecturesRequired=8
GrandtotalofLectures required=42

Reference &TextBooks

1. Russel,S.J., Handbookofnonwovens, Woodhead PublishingLtd., 2006 (Edited)
2. Chapman,R.A.,"ApplicationsofNonwovensinTechnicalTextiles",TheTextileInstitute,2010.
3. HorrocksA.R.andAnandS.C.,"HandbookofTechnicalTextiles",TheTextileInstitute,2000.
4. Adanur,S."Handbookof Weaving",CRCPress,2001
5. RusselS.J."HandbookofNonwoven",TheTextileInstitute,2007
6. Krecma,R.,ManualofNonwovens,TheTextileTradePress,Manchester, UK,1971.
7. Purdy,A.T.,DevelopmentsinNonwovenFabrics,TextileProgress,Vol.12,No.4,TheTextile Institute,Manchester, UK, 1983.

DepartmentElectiveII:

TexturedYarnTechnology BTT060(3-0-0=3) (NPTL/MOOCS)Credit3

CO1: Explaintheneedfortexturingofthermoplasticfilamentyarnforapparel& otheruses.**CO2:**Explain the influence of raw material & process parameters on textured yarn quality**CO3:**Explainthe development of differenttexturingsystem and theremerits
CO4: Decideselectionoftexturingmethods basedonrawmaterialcharacteristics
CO5:Explain thebulkingqualitybydifferentbulkingmethods.

Unit(1): Importanceoftexturising,Methodsoftexturising,Basicprinciplesofheatsettingandtexturising,Falsetwisting,Processvariables,developmentsoffalse twisttexturingmachines.

TotalLecturesRequired=7

Unit(2):Structural geometryoftextured yarn,characterizationoftextured yarn,Stufferboxcrimping,Edgecrimping&othermethodsof texturingthermoplasticyarns.

TotalLecturesRequired=7

Unit (3): Textured yarn properties and fabric characteristics, principles of draw texturing, Drawtexturisingmachines,andpropertiesofdrawtexturedyarn,Effectofprocessvariables,time, temperature,twist and tension on properties oftexturedyarn.

TotalLecturesRequired=8

Unit (4): Principles of air bulking and properties of air bulked yarn, Texturing of non - thermoplasticyarnscrosslinkingandeffectofprocessvariablesonpropertiesoftexturedyarn,Texturing with theaid ofsolvent.

TotalLecturesRequired=7

Unit(5):Yarn characteristics,Morphological chancesinducesbymechano-thermalformsoftexturingand theireffect on properties oftexturedyarns.

Total Lectures Required = 7Grandtotallecturesrequired=36

Referencebook: -

1. Texturedyarn TechnologybyJ.W.S.Hearle
2. SyntheticfibrebyA A Vaidhya.

6. TEXTILECHEMICALPROCESSING–

ILab(BTT553)LTP002Credit1<u>Atleast10Practical from the following</u>

1. Desizingofgreycottonyarn/fabricusingchemicals/enzymeanddeterminethedesizingefficiency.
2. Scouringofdesizedcottonyarn/fabricanddeterminethescouringloss%,dropabsorbencyand degreeof impurities.
3. ScouringofP/Cblendedfabrics.
4. Bleachingofscouredcottonyarn/fabricwithhypochloriteagentandmeasurementofthewhitenessindex, and change inmechanical properties.
5. Bleachingofcottonfabricwithhydrogenperoxideagentandmeasurementofthewhitenessindex, and change inmechanical properties.
6. ColdandHotmercerizationofcottonyarnandmeasurementoftheBAN,andchangeinmechanicalproperties.
7. Scouringand BleachingofWool.
8. DegummingofSilk.
9. Dyeingofcottonyarn/fabricusingdirectdyesandstudyingtheinfluenceoftemperature,Timeand Electrolyte ondye adsorption and fastness properties.

10. Dyeingofcottonyarn/fabricusingvatdyesandassessmentoffastnesspropertiesofdyedmaterial.
11. Dyeingofcottonyarn/fabricusinghotandcoldbrandreactivedyesandassessmentof dye exhaustion%ondye bathandfastnessproperties.
12. Dyeingofcottonyarn/fabricusingazoicdyesandassessmentoffastnesspropertiesofdyedmaterial.
13. Dyeingofcottonyarn/fabricusingsulphurdyesandassessmentoffastnesspropertiesofdyedmaterial.
14. DyeingofWoolfibreswithAcidandmetalcomplexdyesandassessmentoffastnesspropertiesof dyed material.
15. DyeingofSilkyarn/fabricwithAciddyesanddirectdyesandassessmentoffastnesspropertiesof dyed material.

7. **PostSpinningOperation Lab(BTT558)(LTP002) Credit1**
   Aspergivenin theorysyllabus.

8. **PolymerScienceLab(BTT559)(L TP002)Credit1**
   Aspergivenin theorysyllabus.

9. **MOOCs(EssentialforHons.Degree)**

10. **Miniproject/Internship-Credit1**

Study&EvaluationScheme(MCS)
3rd Year B. Tech Man Made Fibre TechnologyUttar Pradesh Textile Technology Institute KanpurAffiliatedto
DR.APJABDULKALAMTECHNICALUNIVERSITY, LUCKNOW

3rdYearVI-Semester **EffectivefromSession-2024-2025**

Sl. No.	Subject Codes	Subject	Periods			EvaluationScheme				EndSemester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	BTT604	PhysicalTestingofTextiles	3	1	0	30	20	50		100		150	4
2	BTT607	FabricStructure&Design	3	1	0	30	20	50		100		150	4
3	BTT603	ChemicalProcessingof Textile-II	3	1	0	30	20	50		100		150	4
4	BTT061/ BTT062	TheoryofTextileStructure/ ClothingScience	3	0	0	30	20	50		100		150	3
5	EOE061-066	OpenElective-I	3	0	0	30	20	50		100		150	3
6	BTT654	Physicaltestingoftextile Lab	0	0	2				25		25	50	1
7	BTT657	FabricStructure&Design Lab	0	0	2				25		25	50	1
8	BTT653	ChemicalProcessingof Textile-IILab	0	0	2				25		25	50	1
9	BNC601/ BNC602	Essence of IndianTraditionalKnowledge/Constitution ofIndia	2	0	0	15	10	25		50			
10		MOOCs(Essentialfor Hons.Degree)											
		Total	**17**	**3**	**6**							**900**	**21**
EssenceofIndianTraditionalKnowledge/ConstitutionofIndiashallbeconductedthroughNPTEL(MOOCS)													

OpenElective-I:AsperAKTUSyllabus

3rdB.Tech (TextileTechnology)6th Semester

1. PhysicalTestingof TextilesBTT604(31 0)Credit4

CourseCode	CourseTitle
BTT-601	**PhysicalTestingofTextiles**
CourseOutcomes	
CO1	Determinevarioustensilepropertiesofyarnsandfabrics
CO2	Explainvariousinstrumentsformeasurementtensilestrengthoffibre,yarnand fabrics.
CO3	Evaluateevennessoffibre,yarnandothertextilestrandsandinterprettheresultsofspectrogram, diagram,andclassimat.
CO4	Testburstingstrength,tearingstrength,pilling,air permeability,crimp,thickness,EPI,PPI,weightand coverfactoroffabrics.
CO5	Measurewaterrepellency,shrinkage,measurementoffastnesstolightandrubbing,thermal transmission,offabrics,andevaluatelowstressmechanical propertiesbyFAST andKAWABATA.

CourseArticulationMatrixofTextileTesting -II:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
BTT-601.1	3	3	3	3	3				3	1		1
BTT-601.2	2	3	3	3	3				2	2		1
BTT-601.3	3	2	3	3	2				2	2		2
BTT-601.4	3	3	2	2	3				2	1		2
BTT-601.5	3	3	3	3	3				3	2		2
Avg.	3	3	3	3	3				2	2		2

ModuleI (10Hours)

Introduction to Textile testing: Importance of testing, Quality, Relative humidity and standardconditionfortesting.Moisturecontentmoistureregains,Selectionofsamplefortesting.Different techniqueforyarn and fabricsampling.

ModuleII (10Hours)

Yarn Testing: Count, Twist, Doubling effect on count and uniformity. Single yarn strength andLeacountstrengthproduct(CSP)andCorrectedCount(CCSP).factorsaffectingtensileproperties. Tensile properties and - various type ofmeasuring instruments based on CRT, CRLand CRE and their working principles, bending rigidity of Yarn by heart-loop test. **Yarn Surfacequality:**Natureandcausesofirregularities,principlesofevennesstesting:opticalandcapacitance methods, evaluations and interpretation of evenness results, concept of indexofirregularity. Variance - length curves and spectrogram analysis, yarn imperfections, yarn faultsclassification,UsterClassimat

andClassifault.**Yarnhairiness:**Importanceandassessmenttechniques.

ModuleIII(10 Hours)
TestingoffabricDimensionalProperties:Thickness,Areadensity(GSM), WarpandWeftcrimp,Cover factor calculations.
TestingoffabricProperties: Tensile,Tear,compressionandshear,FabricAbrasion,Pilling, Bursting, flexuralrigidity;Drape-ability, Crease recovery.
Transmissionbehavioroffabrics: MeasurementofAir,water,heat andstaticchargetransmission.Wicking: vertical and horizontal transportationofliquid.

Module IV 10 Hours)GarmentTestin g:
Sewability: Seamstrength,Seamslippage,Seam pucker,NeedleCuttingIndex LowstressMechanicalProperties of Fabric, Primaryand total hand value.

BooksRecommended:

1. J.E.Booth,PrincipleofTextileTesting
2. VK Kothari, TestingandqualitymanagementVol-1.
3. GAVLeaf,PracticalStatisticsForTheTextileIndustry:PartI,TheTextileInstitut e,1984.
4. SavilleBP,PhysicalTestingofTextiles,Woodheadpublishing-UK,2004.
5. JinlianHU,FabricTesting,WoodheadPublishing,2008.
6. ArindamBasu,TextileTesting(Fibre,Yarnand Fabric),SITRA,Coimbatore,2001.
7. Somasundar S, ApplicationofStatistical MethodsinTextileIndustry,SITRA,Coimbatore,1998.

2. FabricStructure&DesignBTT607(310)Credit4

Aftersuccessfulcompletion ofthiscourse,thestudentsshouldbeableto;

1. Developnew weavestructures.
2. Createnewstructuresusingcolor andweave effect.
3. Drawsimpleand compoundstructures.
4. Illustratespecialweaves.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	1	3	2	1							2
2	3	2	3	2								2
3	3	1	3	2	1							2
4	2	3	3	2	1							2
Avg.	3	2	3	2	1							2

ModuleI (10Hrs)
Introduction: Basic concepts of yarn count, thread density, crimp and cover factor of fabric,classification of fabrics, concept of designing through fabric structure, importance of

fabricstructureanalysis,representation ofweaverepeat,draftplanand pegplan,useofpoint paper.**ElementaryWeaves**:Construction ofplain,twill, satinand sateenweavesand theirderivatives.

AbsorbentFabrics: Constructionofdiamond,diaper,honeycomb,huck-a-backandmock-lenoweaves.
Crepeweave: Constructionofcrepeweaves.

ModuleII(10hours)
CordStructures:Bedfordcord,whipcordandweltwithwaddedstructures.
ColorandWeaveEffect:Weaveand colorcombinations oflineeffect, houndstooth, birdseye,crowsfoot, hair linesandstep pattern.
Extrathreadfiguring: Figuringwith extrathreadswith singleand twocolors.

ModuleIII (10 hours)
Pilestructures:Constructionofvelvetandvelveteenfabrics,fustians. **Backedfabrics**:Construction of backed fabric. **Double Cloth**: Construction of self-stitched, centre stitched andwaddeddoublecloth.

ModuleIV(10hours)
Special Weave: Gauze and net leno fabrics, damasks, brocades, tapestry, tissue, lappet, swivelfiguredstructures.**Calculations:**Rawmaterialcalculationstoproducedifferentweaves andtheirtechnicalspecifications.

BooksRecommended:

1. Groscicki ZJ,"WatsonsTextileDesignandColour",Newnes Buttersworth(1988).
2. GroscickiZJ,"WatsonsAdvancedTextileDesign",NewnesButtersworth(1989).
3. Klibbe J W,"Structural Fabric Design",Revised Edition,1965,North Carolina StateUniversity.
4. NisbethH,"GrammerofTextileDesign",TaraporeWalasonsandCo.(1994).
5. GokarneshanN,"FabricStructureandDesign",NewAgeInternational,NewDelhi(2004).

3. Chemical ProcessingofTextile-IIBTT603(31

0)Credit4CourseOutcomes:
Aftersuccessfulcompletion ofthis course,the studentsshould beable to;

1. Performdyeingoftextiles madeupsyntheticfibres andtheirblends.
2. Controlprocessparameters anduseofdyeingmachinesfordyeingoftextilematerials.
3. Selectthedyes andrecipeforpreparationofprintingpasteforprintingoftextile materials.
4. Explainfinishingtreatmentprocessandtreat thefabricwithdifferentfinishingagent.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	2	3	1								1
2	3	2	2	2								1
3	3	2	3	1								1
4	3	2	3	1								1

5	2	2	2	1								1
Avg.	3	2	3	1								1

ModuleI (10Hours)

Dyeingof syntheticfibres: Dyeingofpolyester withdispersedye.DyeingofNylon withaciddye.Dyeingof acrylicwith cationic dye.

Dyeing of blends: Classification of blends and shades, Methods for dyeing of blends. Suitabilityofeach methodfordyeingof specific blend-P/C, P/V, P/W. W/A.

ModuleII (10Hours)

Identification of dyes: Identification of dye on dyed natural and man-made textiles**Carbonisation:**Objectives,selectionofchemical,processparameters,troubleshoots,precautionary measures and efficiencyof carbonisation.**Dyeing machineries**: J-box, kier, mercerizing machinery, loose fibre, yarn and package dyeingmachines. Jigger, winch, jet and HTHP beam dyeing machine. Padding mangle, Continuousbleachingrange, Continuous dyeingrange.

ModuleIII (10)Hours)

Printing: Objective, Difference between dyeing and printing, Characteristics of printing pasteingredients,classificationand mechanism of thickeners.

Printing methods: Hand block, roller and screen printing processes. Working of roller printingmachine, photoelectric method of screen preparation. Drawback and advantage of each method.**Styles of printing:** Direct, Discharge and Resist. Printing of cotton with reactive, vat and azoicdyes and pigment, Silk with acid dyes, Polyester with disperse dye and Acrylic with basic dyes.**Printingaftertreatments**: Steaming, curing,ageingin printing.

TransferPrinting: Types,mechanismandmachineriesoftransferprinting.

DigitalPrinting: Mechanism,processparametersandmachinery.

ModuleIV(10 Hours)

Finishing: Significanceandclassificationoffinishing.

Mechanicalfinish: MechanismofSoftening,calendaring,Sanforizingandtheirevaluation.**Chemical and functional finish:** Mechanism, process parameters and troubleshooting's ofSoftening,anti-crease finish, water proof and water repellent finish, flame-retardant and fireproof finish, moth proof and insect repellent finish, Soil release finish; Organdie finish;Bio polishing,Stonewashingofdenim ,Anti-microbial finish,UVfinish, antistaticfinish,non-slipfinish and theirevaluation.

Waste minimization: Need for waste minimization. Brief idea about chemical and auxiliaryconservation,waterconservation,energyconservation.Textileeffluentmanagement.Technique s of effluent treatment.Flow chart of primary, secondary and tertiaryeffluenttreatment.

BooksRecommended:

1. Miles L W C, "Textile Printing", Dyers Company Publication Trust, Bradford, England,1981.
2. ShenaiVA,"TechnologyofPrinting",SevakPublications,Mumbai,1990.
3. HallAJ,"TextileFinishing",HaywoodBooks, London,1996.
4. ShenaiVAandSaraf,NM,"TechnologyofTextileFinishing",SevakPublications, Mumbai,1990.
5. KarmakarS.R.,"ChemicalTechnologyinthePre-

treatmentProcessofTextiles",Elsevierscience,1999.
6. SchindlerW.D.andHauserP.J.,"Chemicalfinishingoftextiles",WoodheadPublishingLtd.,2004.
7. Cavaco-PauloA.andGubitzG.M.,"TextileProcessingwithenzymes",WoodheadPublicationLtd.,2003

DepartmentElective

Theoryof TextileStructure BTT061(LTP300)Credit3

CourseOutcomes:

Aftersuccessfulcompletion ofthis course,the studentsshould beable to;

1. Explainidealhelicalmodelofyarnanddifferent structuralparameters.
2. Illustratemethodofmeasuringstructuralparameters.
3. Determineeffectofdifferentparametersaffectingthestructureofyarnandonits properties.
4. Illustratestructuralcharacteristics ofknittedandnonwovensanddesignthefabrictoget thedesiredproperty

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	2	3	1								1
2	3	2	2	2								1
3	3	2	3	1								1
4	3	2	3	1								1
Avg.	3	2	3	1								1

ModuleI (10Hours)

Geometryoftwistedyarn: Idealizedhelicalyarnstructure;yarncountandtwistfactors,twistcontraction;Limits of twist.

Packing of fibres in yarn: Idealized packing; measurement of packing density and radialpacking density of yarn; Packing in actual yarns; Specific volume of yarns; Equation of yarndiameter.

FibreMigration: Idealmigration,tracerfibertechnique,characterizationofmigrationbehavior, migration in spun yarns, mechanisms of migration, effect of various parameters onmigrationbehavior.

ModuleII (10Hours)

StructuralMechanics:Translationoffiberpropertiesintoyarnproperties;Extensionofcontinuous filament yarn for small strains and large strains; Prediction of breakage, Nature ofrupture for continuousfilamentyarn.Extension and breakage ofspunyarn,Blendedyarnstructure, Structure property relationship of ring, rotor, air-jet, friction spun yarn, Extension ofcontinuousfilamentyarn.

ModuleIII(10 Hours)

Fabric Geometry: Engineering approach to the analysis of fabric, Pierce geometrical model,flexible thread model and rigid thread model, Square fabric, Jammed Structure, square

andjammed fabric, Crimp interchange, Maximum possible cover factor. Yarn cross sections in thefabric,Pierceelasticthreadmodel. Geometryofweftand warp knitted structures.

ModuleIV(10Hours)
Fabricdeformationundertensilestress;predictionofmodulus;tensilepropertiesinbiasdirection. Other fabric deformation: compression, shear, bending and buckling; fabric handle;Structureof felts andstitch bonded fabric;Basic of braidedfabricstructure.

BooksRecommended:

1. HearleJ.W.S.,"StructuralMechanicsofFibers,YarnsandFabrics",Wiley-Interscience,NewYork,1969.
2. Goswami B. C., "Textile Yarns: Technology, Structure and Applications", Wiley-Interscience,NewYork,1977.
3. Jinlian Hu., "Structure and Mechanics of Woven Fabrics", Woodhead Publishing Ltd.,2004.
4. Hearle, J. W., Thwaites, J. J., & Amirbayat, J. (Eds.). (1980). Mechanics of flexible fibre assemblies (p. 635). Germantown: Sijthoff & Noordhoff..
5. HassanM.Berery.,"EffectofMechanicalandPhysicalPropertieson FabricsHand",WoodheadpublishingLtd.,2005.
6. BeheraBK,HariPK,"WovenTextileStructure:TheoryandApplications".Woodheadpublishing.

DepartmentElective

Clothing ScienceBTT062 (L T P 3 0 0) Credit

3CourseOutcomes:

Aftersuccessfulcompletion ofthiscourse,thestudentsshouldbeableto;

1. Describethermalandnon-thermalcomponentsof clothingcomfort.
2. Explaintherole ofbodycomponentsinmaintainingbody temperatures
3. RecognizethePrinciplesofheattransfertoandawayhuman body
4. Explainvariousaspectsofthermal&skinsensationalclothing comfort

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	1	3	2	1							2
2	3	2	3	2								2
3	3	1	3	2	1							2
4	2	3	3	2	1							2
Avg.	3	2	3	2	1							2

ModuleI (10Hours)
Introduction: Concept of selection of fabrics for clothing purpose. Types of fabric required forappareluse fordifferentagegroup,occasions,purpose.Fabricpropertiesandperformancefor appareluse.
Serviceability of Fabrics: Abrasion resistance - flat abrasion, flex abrasion, edge abrasion,Pilling - mechanism of pilling formation, anti-pilling techniques, Snagging, Strength, Tearingstrength-

Tensilestrength -Burstingstrength,seam strengthand seam slippage.
Tailorability of fabrics: Tailorability of woven and knitted garments, Tailorability of leathergarmentsand furgarments

ModuleII (10Hours)
Aesthetic properties: Drape, Crease and Wrinkle recovery - Lustre. Yarn unevenness: neps,thick place, thin place, periodic fault, Scroopiness, Colour- Colour fastness: to light, washing,perspiration,rubbing, drycleaning.
Dimensional Stability of Fabrics: Hygral expansion, Relaxation shrinkage, Swellingshrinkage,Feltingshrinkage.Mechanismof fabricshrinkage-Relationship betweenHygralExpansion, Relaxation shrinkage and extensibility - Knitting Process Parameters andfabricstability.Methods of measuringdimensional stabilityto drycleaning and dryheat.
FabricHand: smoothness,fullnessandstiffness,subjectivehandjudgment,objectiveevaluationof fabric handand itsapplications.

ModuleIII(10 Hours)
Clothing Comfort: Definition of comfort - Human clothing system - Physical,Physiologicaland psychological aspects of comfort. Tactile and pressure sensation aspects. Applications ofclothingcomfort research.
Thermal Comfort: Introduction. Thermal transfer processes. Dry heat transfers and Rapid heattransfer. Function of Textiles in enhancing thermal comfort. Comparison of thermal comfortpropertiesfordifferent textile structures.

ModuleIV(10 Hours)
Functional Properties: Elasticity: elastic recovery, residual strain; Thermal insulation. Waterrepellence, water resistance and water proof; Wicking: vertical and horizontal transportation ofliquid;Waterabsorbency; UV protection; Soilrelease. **Safety:**Toxicity-residual dyestuffand other finishingagent; Flammability

BooksRecommended:

1. Kothari,VK,"TestingandQualityManagement",CBSBookPublishers,NewDelhi,2000.
2. Li.Y,"TheScienceofClothingComfort",TextileProgress,Volume:31,No.1/2 , TextileInstitute.
3. Saville B P, "Physical Testing of Textiles", The Textile Institute, Woodhead publicationlimited,Cambridge.
4. BillieJCollierandHelenHEpps,"TextileTestingandAnalysis",Prentice-Hall Inc.,NewJersey.
5. LymanFourt&NormanR.S.Hollies,"Clothing:Comfort&Functions",MarcelDekker,Inc,NewYork.
6. G.Song,"ImprovingComfortinClothing",WoodheadPublication.
7. A.Das,R.Alagirusamy,"ScienceinClothingComfort",WoodheadPublication

5. **OpenElective-I**:ThestudentmayalsohavechoicetogothroughcourseviaMOOCS/NPTEL

6. **TextileTestingLabBTT654(002)Credit1Atle**

ast10Practical of thefollowing

YarnTesting

1. TodeterminetheHankandHank C.V%ofthegivensliver/Determinationofthewithinbobbinandbetween bobbin hank C.V %of the given roving.
2. Todeterminethe countofayarnbyusingphysical/electronicbalance.
3. TomeasuretheSingleyarnandPlyyarntwistofthegivenyarnsampleusing TwistTester.
4. TodeterminetheYarncount,LeaStrengthand CSPofthegivenyarnsample.
5. Todeterminethesingleyarnstrength.
6. ToStudyevenness andimperfectioninthegivenyarnand comparetheresultswithUsterstatistics.
7. ToStudythe spectrogram andirregularitytraceto determinetypeofirregularity.
8. ToPrepareyarnsAppearanceBoardsandcomparewithASTMstandards.

FabricTesting

9. Tocharacterizea woven fabricwithrespecttoitsdimensionalproperties:threaddensity,yarnnumber,crimp, weave,coverfactor,weight,skewness,thickness
10. To determine the tensile strength of a woven fabric by strip test method. Draw load-elongationcurveof awoven fabric.
11. Todeterminethe tearstrength of afabricusingElmensdorftear testeror ballistictester.
12. Todeterminethe burstingstrength of afabric usinghydraulicburstingtester.
13. Todeterminethe abrasionresistanceofafabric.
14. To determine the bending length and flexural rigidity of a woven fabric using the Shirleytester.
15. Todeterminethecreaserecoveryoffabricandobservetheeffectof loadingtime andrecoverytime on creaserecovery.
16. Todeterminethedrape coefficientof wovenandknittedfabricusingthedrapemeter.
17. TomeasuretheAirpermeabilityand FabricImpactStrengthofthe givenfabric.
18. Tomeasurethewaterpermeabilityofthegivenfabric.

7. **FabricStructure&Design PracticalBTT657(LT P:002)Credit1**

Analysisofthefabricinrespecttoyarnandfabricparametersandtheir weaverepresentationwith draftand pegplan:

1. Plainweave
2. Plainderivative-Ribweave
3. Twillweave
4. Satin/sateenweave
5. Diamondsweave
6. Honeycombweave
7. Huck-a-backweave

8. Mocklenoweave
9. Crepeweave
10. Bedfordcordweaves/weltstructure
11. Extrathreadfiguredweave
12. Velvet/velveteenweave
13. Doublecloth

8. Textile Chemical processing II Lab BTT653 (0 0 2) Credit

1Atleast10Practical ofthefollowing

1. DyeingofPolyesterfibres/yarn/fabricswithDisperseDyeusingcarrierdyeingprocess.
2. DyeingofPolyesterfibres/yarn/fabrics withDisperseDyeusingHT-HPdyeing process.
3. DyeingofNylonyarn/fabricwithAcidDye.
4. Dyeingofpolyacrylonitrilefibrewithcationic dyes.
5. Dyeingofblended fabricwithsuitabledyes.
6. Printingofcottonfabricwithdirect styleprintingandassessmentoffastnessproperties ofprinted material.
7. Printingofcotton fabric with dischargestyleprintingandassessmentoffastnessproperties ofprinted material.
8. Printing of cotton fabric with resist style printing and assessment offastnessproperties ofprinted material.
9. Finishingof cottonfabricusingstarchandevaluation ofstiffnessand add-on%.
10. Finishingof cottonfabric usingsoftenersandevaluationofdrape and add-on%.
11. CreaseProofingofcottonfabric andevaluationofcreaserecovery angle.
12. Assessmentofshrinkage ofwovenandknitted fabrics.
13. Finishingof cottonfabric withanti-pillingfinishand evaluationof pilling.
14. Finishingof cottonfabric withwaterrepellentfinishandevaluationofwetting angle.
15. Finishingof cottonfabric withflameretardantfinishandevaluationofLOI.
16. Finishing of cotton fabric with soil release finish and measure the ability offabric to releaseoilystainsduringhome laundering.
17. Determination of the colour difference and colour strength value of dyed material usingcomputercolour matching system.

9. EssenceofIndianTraditionalKnowledge/ConstitutionofIndiashallbeconductedthroughNPTEL(MOOCS)