Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Name of Program: B.TECH (Textile Engineering)

SUBJECT CODE	CATEGORY	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTMA401	ODS	STATISTICS AND QUALITY CONTROL	60	20	20	0	0	3	1	0	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):
1. To provide the knowledge of statistical analysis of test data.
2. To provide knowledge of quality control chart.
3. To build up skill and ability for R and D work through statistical analysis.

Course Outcomes (COs)
Student will be able:
1. To demonstrate the knowledge for statistical analysis of test data.
2. To make the quality control chart of the manufactured product.
3. To Indentify and analyse the reason of defect through statistical analysis and use the knowledge in developing the product

Course Contents:

Unit I

Collection and presentation of data, Measures of central tendency, Measures of variation, Skewness, Moments and kurtosis, Probability Theory, priori and posteriori probabilities, conditional probabilities Bay's theorem (Simple Problems).

Unit II

Probability distribution: discrete distribution, binomial and poison distributions .Continuous Normal Distribution, Exponential Distribution, central value theorem, Normal Probability curve, calculation of mean and variance From Normal Curve, Practical usefulness of normal Distribution, sampling distribution, Bivariate Distribution, Correlation and Regression, Analysis of Variance, significance of error R2 (one way classification only).

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Unit III

Elementary theory of testing of hypothesis, Statistical Hypothesis, Null Hypothesis, Errors of first and second kind, Critical Region, level of Significance. Chi-square test of goodness of fit Test of significance based on T, F and Z distribution.

Unit IV

General idea of sampling method, random sample, sampling size, sample size for different distribution, differences between average and variances

Unit V

Statistical quality control chart, control limits, X, R, P, Pn chart etc., analysis by defects, number of defects (C chart), introduction to TQM and ISO 9000

References:

1. Gupta, Kapoor: Fundamental of Mathematical Statistics

2. Booth J.E.: Textile Testing.

3. SITRA : Application of statistics in textile.

4. Grover B. & Hanby D. S.: Textile testing and Quality Control. Grant Eugene; Statistical Quality control; TMH

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			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTTX401	DCS	YARN MANUFACTURING II	60	20	20	30	20	3	1	2	5

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical;   **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. To explain the concept of drafting and how the different process parameters influence the drafting process and the different type of drafting systems, necessary settings, technical parameters, monitoring and auto-leveling systems and modern developments in draw-frames.
2. To illustrate the objectives of combing operation, working and constructional features of a modern rectilinear comber, necessary settings, technical parameters and calculations related to production, noil % etc.
3. To describe the constructional features, principle of operation and objectives of a modern speed-frame and explain it's necessity in the context of ring-spinning system.

Course Outcomes (COs)

Student will be able:

1. To comprehend the principles of operation of any type of drafting systems/draw-frames and thereby effectively alter or modify the process parameters, so as to meet the desired level of outcome.
2. To examine the characteristics of a lap suitable for the combing operation and accordingly modify the different settings of the lap former machine so as to achieve the desired objectives.
3. To interpret the operations of different types of combing machines and calculate their performance level for the production of superior quality combed yarn in terms of cost and productivity.
4. To infer the necessity of the roving-frame in the context of ring-spinning system and effectively operate the different types/models of roving-frames so as to produce the desired quality of roving.

Course Contents:

Unit I

Draw frame: Objectives of drawing, constructional details of draw frame, concept of perfect drawing, different drafting systems, monitoring and auto leveling of irregularities.

Unit II

Draw frame blending, recent developments, performance assessment, idea of setting, speed and other technical parameters. Calculations related to draft, production etc. Defects and remedies, supervisory check points.

Unit III

Combing: Lap preparation, Lap former, setting, speed and recent developments, production calculations, Methods of Lap preparations and its importance.

Unit IV

Objectives of combing, construction and principle of working, function of different motions, combing cycles, different types of combers, different setting points and speeds. Calculation related to production, noil %, draft etc. Recent developments, assessment of comber performance, control of waste, Defects and remedies, supervisory check points.

Unit V

Speed frame: Objectives of speed frame, construction and principle of working, details of speed frames. Drafting, twisting winding and building mechanism, Speed and setting points, latest developments, Different types of flyers and suspended type of speed frame. Calculation related to speed, draft, production, performance assessment, defects and remedies, supervisory check points.

List of Practical (Expand it if needed):

1. To study of Drawframe, Comber and Speed frame, constructional details, setting and gauging, controls and change places, Calculations of speeds, drafts, production
2. To study the general features of a draw frame, Draw the drafting arrangement of the draw frame.
3. Draw the gearing diagram of draw frame and calculate break draft, main draft, total draft, draft constants, creel draft.
4. Study the machine, material and man safety devices in draw frame.

5. To study the general features of a speed frame. Draw the drafting arrangement of the speed frame.
6. Draw the gearing diagram of speed frame and calculate break draft, main draft, total draft, draft constants, creel draft.
7. To study the building mechanism of a speed frame.
8. To study the twisting mechanism and to calculate the twist constants and spindle speed based on the gearing diagram.
9. Study the machine, material and man safety devices in speed frame.

References:

1. Manual of Cotton Spinning Vol. 3–Text. Institute.
2. Klein; The Textile Institute – Short Staple Spinning Series.
3. Taggart; Cotton Spinning Calculations.
4. Venkatasubramani; Spun Yarn Tech. Vol. 3.
5. Khare AR; Elements of Carding & Drawing.
6. Khare AR; Elements of Combing.
7. Cotton Combing – Gilbert Merrill
8. Cotton Drawing and Roving – Gilbert Merrill
9. Drawing, Combing and Roving – Z.S. Szaloki
10. Electronics Controls for Textile Machines – Hiren Joshi, Gouri Joshi, NCUTE Pub.2002
11. Cotton Spinning – Taggart

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*	L	T	P	CREDITS
BTTX402	DCS	FABRIC MANUFACTURING II	60	20	20	30	20	3	1	2	5

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical;   **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. To provide the knowledge of the working principles of primary and secondary motions of the loom.
2. To explain the working of Dobby and Jacquard Shedding Mechanisms.

Course Outcomes (COs)

Student will be able:
1. To identify the working principles of primary and secondary motions of the loom and can manufacture fabrics as per the required quality and specifications.
2. To demonstrate the knowledge of Shedding mechanism and can prepare fabric of desired weave design.

Course Contents:

Unit I

Principles of weaving. Primary, Secondary an Auxiliary motions. Shedding – its various types and devices, positive and negative shedding, Negative tappet shedding mechanism, shedding tappets, heald reversing motions, early and late shedding, shed troughing and heald staggering.

Unit II

Picking classification, mechanism of Over and Under pick motions, picking tappets, shuttle speed, shuttle checking devices, causes of shuttle flying and shuttle trap. Beat-up sley movement, sley eccentricity and its effect, factors affecting sley movement, double beat-up, Timing diagram of primary motions.

Unit III

Classification of take-up motion, 5 and 7 wheel take-up motion, Negative let-off motion and its related calculations, Causes of pick spacing variation. Temples-types and uses.

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Unit IV

Dobby shedding scope and uses, negative and positive dobbies, working Principles of Keighley, staubli, Cross-border dobbies, modern electronics dobbies; Preparation of pattern lattices and methods for preparation of punch cards in modern dobbies.

Unit V

Jacquard shedding, coarse pitch, working principle of single cylinder single lift and double cylinder double lift jacquards. Various types of harness tie-ups and their uses, londontie and Norwich tie. Casting out of harness, figuring capacity of jacquard. Fine pitch jacquard, working principle, Vincenzi jacquard and Vardol jacquards, Modern electronic jacquards.

List of Practical (Expand it if needed):

1. Detailed study of primary motions of a plain loom
2. Detailed study of secondary motions of a plain loom
3. Detailed study of temples used on the loom.
4. Detailed study of Dobby shedding mechanism
5. Detailed study of Jacquard shedding mechanism

References:

1. Weaving Vol. II - Bannerjee NN
2. Fancy Weaving - Aswani K T
3. Principle of Weaving - Marks & Robinson
4. Woven Fabric Production II, NCUTE,1st Ed Dobby, Jacquar; NCUTE Publication (2002)
5. Weaving – Machines, Mechanisms and Management - Talukdar MK et al.
6. Textile Mathematics – Vol.III - Booth J E
7. Fox; Mechanism of Weaving;
8. BTRA Silver Jubilee Monograph Series - BTRA; Loom Shed
9. Fabric Forming - Hasmukharai B
10. Electronic Controls for Textile Machines, Joshi Hiren, Gauri, NCUTE Pub.(2003)
11. Weaving – Tech. & Operations - Allan Ormerod, Walter S. Sondheln

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SUBJECT CODE	CATEGORY	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTTX403	DCS	FABRIC STRUCTURE I	60	20	20	30	20	3	1	2	5

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical;   **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. To understand and design basic fabric structures (like plain, twill and satin structures as per specifications.
2. To identify and differentiate different derivatives of basic weaves and their effect in fabric.

Course Outcomes (COs)

Student will be able:

1. To develop new woven fabric design
2. To make honeycomb, welt structures.
3. To solve technical problems related to basic fabric structures on the loom.
4. To provide suitable draft and peg plan for a given weave for making design

Course Contents:

Unit I

Fabric classification, Weave notation and weave repeat, Introduction to design, drafting and peg-plan systems and their relationship, Plain weave and its derivatives e.g. warp rib, weft rib and hopsack/ matt.

Unit II

Twill weave its different types and derivatives e.g., pointed, curved, broken, elongated, transposed, fancy and cork-screw, Satin and sateen weave regular and rregular.

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Unit III

Diamond, Honeycomb ordinary honeycomb and brighton honeycomb, Mockleno, Huck-aback, crepe weave, different types of bed ford cord, welt and pique.

Unit IV

Twill angle and yarn twist angle, Effect of yarn twist direction on the prominency of twill lines in the fabric, Reed and heald count systems and related calculations.

Unit V

Color and weave effects stripes and checks.

List of Practical (Expand it if needed):
1. To study the design, draft and peg-plan of Plain weave
2. To study the design, draft and peg-plan of Satin and sateen weave
3. To study the design, draft and peg-plan of honeycomb
4. To study the design, draft and peg-plan of Brighton honeycomb
5. To study the design, draft and peg-plan of bed ford cord
6. To study the design, draft and peg-plan of welt and pique
7. To study the design, draft and peg-plan of twill
8. To study the colour and weave effects for strip weave
9. To study the colour and weave effects for check weave
10. To study the reed and heald count systems and related calculations

References:

1. Watsons' Textile Design & Color. - Grosicki
2. Grammar of Textile Design - Nisbet
3. Structural Fabric Design - Klibbe
4. Textile Weaving & Design - Murphy W S
5. Mary Humphries Fabric Glossary.

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SUBJECT CODE	CATEGORY	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTTX404	DCS	FIBER SCIENCE II	60	20	20	30	20	3	1	2	5

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical;   **C** - Credit;
*__Teacher Assessment__ shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. To impart knowledge about the principle and manufacturing process of high performance fibres.
2. To understand accurately the optical, Electrical and Thermal properties of different synthetic fibres.

Course Outcomes (COs)

Student will be able:
1. To identify and evaluate the properties of synthetic fibres accurately.
2. To explain the correct manufacturing process of various synthetic fibres.
3. To solve technical problems related to fibres behavior on the machine.
4. To explain optical and thermal behavior of the fibres.
5. To develop the new fibres.

Course Contents:
Unit I

New Fibres Glass, Carbon, Aramid, Spandex, Spectra, Nano fibres and Teflon etc. Basic concept of bi-component, hollow and tri-lobal fibres, High speed extrusion, Tow conversion process.

Unit II

Texturing - Importance, basic principle, heat setting, false twisting, process variables, development of false twist texturising machine. Textured yarns like stuffer box, crimping, edge crimping, knit-de-knit, gear crimping etc. properties of such yarn. Principle of air bulking and properties of air-jet textured yarn. Chemical texturising, production of POY, MOY, FDY and DTY yarn

Unit III

Optical properties - refraction, absorption, dichroism, reflection and luster. Birefringence and orientation, specific index of birefringence and its measurement.

Unit IV

Electrical properties – dielectric properties, electrical resistance of fibres and its measurement, static electricity, measurement and explanation of static phenomena. Frictional properties - nature of friction and application to fibres, static and dynamic friction of yarn on ceramics, metals

Unit V

Thermal properties thermal parameters, structural changes in fibres on heating, concept of heat setting and its usefulness, factors affecting the heat setting behavior of textile materials, first and second order transition.

List of Practical (Expand it if needed):

1. Identification of new fibers like glass, aramide
2. Study of Bi-component hollow and tri-lobal fibre
3. Measurement of crimp rigidity and bulkiness of textured yarn
4. Measurement of bulking properties of airjet textured yarn
5. Chemical texturing of cotton, viscous and jute fibre in lab.
6. Measurement of thermal insulation value

References:

1. Vaidya; Production of Synthetic Fibres.
2. Shennai VA; Technology of Textile Processing – Vol.I, Textile Fibres.
3. Gupta, Kothari; Progress in TST Vol.II Textile Fibres Developments & Innovations
4. Murthy HVS; Introduction to Textile Fibre
5. Moncrieff Man Made Fibres.
6. Akira Nakamura; Fibre Science & Technology (Translated from Japanese).
7. Mishra SP; A Text Book of Fiber Science & Technology.
8. Tatsuya Hongu, Glyn O. Philips; New Fibers 2nd Edition.

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SUBJECT CODE	CATEGORY	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTTX405	DCS	CAD IN TEXTILE	0	0	0	30	20	0	0	2	1

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical;   **C** - Credit;
*__Teacher Assessment__ shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. To provide the knowledge about the preliminary functions of CAD in Textile
2. To impart conceptual knowledge for the Industry as a Fabric Designer.
3. To understand fabric structure, figure designing for mass production.

Course Outcomes (COs)

Student will be able:
1. To apply their knowledge on the various functions of the CAD in textile
2. To make different Fabric designing
3. To identify the fabric making process, print designing for fabric.
4. To use their knowledge for different tools of CAD in Textile

List of practicals (Expand it if needed):

1. To Study woven structure

2. To study colour and weave effect

3. To Study Installation of CAD software

4. To Study Various menu commands

5. To prepare design on dobby CAD software with proper parameters and color effects. Take a printout.

6. To manage dobby design library with twill and honey comb.

7. To manage dobby design library with huck a back design.

8. To draw figured pattern on graph paper and apply to Jacquard CAD software with proper parameters and color effects. Take a printout.

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9. To manage jacquard design library with same figure to different weave.

10. To draw figured pattern on graph paper and apply to printex CAD software with proper parameters and color effects. Take a printout.

11. To manage printex design library with different yarn and color specification.

12. Introduction of electronic jacquard punching system

References:

1. Fabric Structure & Design - Gokarneshnan, N
2. CAD Manuals
3. CAD-Cam Principles and applications - Rao; TMH

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			THEORY			PRACTICAL		L	T	P	
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTHU301	ODS	COMMUNICATION SKILLS - II	0	0	0	0	50	0	0	2	1

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical;   **C** - Credit;
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Course Educational Objectives (CEOs):
1. To develop the second language learners' ability to enhance and demonstrate LSRW Skills.
2. To enable students to acquire English Language Skills to further their studies at advanced levels.

Course Outcomes (COs)
The students will be able:
1. To enhance confidence in their ability to read, comprehend, organize, and retain written information.
2. To write grammatically correct sentences for various forms of written communication to express oneself.

List of experiment: (Language Lab)

1. Self Introduction
2. Reading Skills
3. Role plays
4. Interview skills
5. Listening Skills
6. Reading Skills
7. Debate
8. Group discussion
9. Oral Presentations

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References:

1. Business Communication, Mc Graw Hill Education, Matthukutty M. Monippally.
2. Effective Business Communication , Mc Graw Hill Education, Neera Jain, Shoma Mukherji.
3. Technical Communication , Cengage , P. Subba Rao, B. Anita Kumar, C. Hima Bindu.
4. Business Correspondence & Report Writing , Mc graw Hills. , R.C. Sharma & Krishna Mohan
5. Business Communication- Mc graw Hills , Peter Cordom.
6. Communication Skills , Oxford , Sanjay Kumar & Pushpa TMH.
7. Effective Technical Communication , M. Ashraf Rizvi ,Mc Graw Hill Education.

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