Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
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Choice Based Credit System (CBCS) in Light of NEP-2020
BBA (Hons.) - V SEMESTER (2021-2024)

BBAI501 HUMAN VALUES AND PROFESSIONAL ETHICS

COURSE CODE	CATEGORY	COURSE 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*				
BBAI501	AECC	Human Values and Professional Ethics	60	20	20	-	-	3	-	-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **AECC-** Ability Enhancement Compulsory Course

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

The objective of the course is to disseminate the theory and practice of moral code of conduct and familiarize the students with the concepts of "right" and "good" in individual, social and professional context

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of 5 questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcomes

1. Help the learners to determine what action or life is best to do or live.
2. Right conduct and good life.
3. To equip students with understanding of the ethical philosophies, principles, models that directly and indirectly affect business.

COURSE CONTENT

Unit I: Human Value

1. Definition, Need for Human Values, Sources of Values
2. Essence of Values
3. Classification of Values (Temporal Values, Universal Values)
4. Values Across Culture

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BBAI501	AECC	Human Values and Professional Ethics	60	20	20	-	-	3	-	-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **AECC-** Ability Enhancement Compulsory Course

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Unit II: Morality

1. Morality its meaning and definition
2. Values Vs Ethics Vs Morality
3. Concept of Impression Management
4. Impression Management Strategies (Intimidation, Ingratiation, Self-promotion, Supplication, Exemplification)

Unit III: Leadership in Indian Ethical Perspective.

1. Leadership, Pre-requisites of Leadership
2. Approaches to Leadership, Leadership Styles
3. Ethical Leadership
4. Values in Leadership

Unit IV: Business Ethics

1. Business Ethics its meaning and definition
2. Relevance of Ethics in Business organizations.
3. Theories of Ethics (Teleological, Deontological)
4. Code of Ethics

Unit V: Globalization and Ethics

1. Globalization and Business Changes
2. Values for Global Managers
3. Corporate Social Responsibility
4. Benefits of Managing Ethics in Work Place.

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BBAI501	AECC	Human Values and Professional Ethics	60	20	20	-	-	3	-	-	3

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***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Suggested Readings

1. Kaur, T. (2004). ***Values and Ethics in Management.*** Galgotia Publishing Company: New Delhi
2. Kaushal, S.L. (2006). ***Business Ethics. Concepts, Crisis and Solutions.*** Deep & Deep Publications Pvt. Ltd.: New Delhi
3. Beteille, Andre (1991). ***Society and Politics in India***. AthlonePress: New Jersey.
4. Chakraborty, S. K. (1999). ***Values and Ethics for Organizations***. Oxford University Press
5. Fernando, A.C. (2009). ***Business Ethics - An Indian Perspective*** .India: Pearson Education: India
6. Fleddermann, C. D. (2012). ***Engineering Ethics***. New Jersey: Pearson Education / Prentice Hall.
7. Boatright, J.R. (2012). ***Ethics and the Conduct of Business.*** Pearson. Education: New Delhi.
8. Crane, A.and Matten, D. (2015). ***Business Ethics***. Oxford University Press Inc:New York.
9. Murthy, C.S.V. (2016). Business ***Ethics – Text and Cases***. Himalaya Publishing House Pvt. Ltd:Mumbai
10. Naagrajan, R.R (2016). ***Professional Ethics and Human Values***. New Age International Publications: New Delhi.

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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*				
BTTX601	DCC	FABRIC MANUFACTURING III	60	20	20	30	20	3	0	2	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. The students will be able to describe the working of various mechanisms automatic loom.
2. To describe the working of Various Auxiliary Motion.
3. The students will be able to describe the working of multiple box looms.
4. The students will be able to describe the working of various mechanisms of terry loom.

Course Outcomes (COs)

Student will be able to

1. Demonstrate the knowledge of Let-off mechanism and Take-up mechanism and adjust the desired PPI.
2. Understand the various working mechanisms of automatic loom.
3. Understand the working mechanism of various auxiliary motions attached with the loom.
4. Understand the working mechanism of multiple box looms and can prepare fabric of desired weft pattern.
5. Understand the working mechanism of various mechanisms of Terry loom.

Syllabus

Unit I: Positive Let-off and Take-Up motions **9Hrs**

Positive/controlled, warp tension control, working principles and features of Ruti, Bartlet and Saurer let-off motions. Continuous Positive type take-up motion, electronic let-off and take-up motions.

Unit II: Mechanism of Automatic Power looms **10Hrs**

Different types of mechanical weft feelers e.g. side sweep and depth feelers, electrical & electronic weft feelers, shuttle protecting motion, pirn changing and shuttle changing mechanism, temple cutters and unifil loom winder.

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BTTX601	DCC	FABRIC MANUFACTURING III	60	20	20	30	20	3	0	2	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.

Unit III Auxiliary motions of loom **10Hrs**

Warp stop motion: mechanical and electrical types; Weft stop motion: Side and center weft fork motion, Warp protecting motion: loose reed and fast reed warp protecting motion and Warp easing motion.

Unit IV: Multiple box loom **8Hrs**

Weft patterning and mixing, pick at will type multiple box loom, Cowburn & Peck (Eccles); preparation of card chain for 4x1 Eccles box motion for different weft pattern, introduction to card saving device.

Unit V: Terry Loom **8Hrs**

Essential requirement of terry weaving, different terry mechanisms: cam driven 3-pick terry mechanism, dobby driven 3-pick terry mechanism, heading motion, fringing motion.

List of Practical (Expand it if needed):

1. To study the working of Ruti-B positive let-off motion.
2. To study the continuous positive Take-up motion.
3. To study the working of Weft Feeler Mechanism.
4. To study the working of Shuttle Protector Mechanism.
5. To study the working of the pirn change mechanism in automatic looms.
6. To study the working of the Side Weft Fork mechanism.
7. To study the working of Loose Reed mechanism.
8. To study the working of Fast Reed mechanism.
9. To study the working of Mechanical warp stop motion.
10. To study the working of electrical warp stop motion.
11. To study the working of 4 x 1 Eccle's drop box motion.
12. To study the working of 3-Pick Terry mechanism.

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			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTTX601	DCC	FABRIC MANUFACTURING III	60	20	20	30	20	3	0	2	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.

Textbooks:

1. Weaving Machines. Mechanisms and Management by Talukdar M. K., Ajgaonkar D. B. and Sriramulu P. K. Mahajan Publishers Pvt Ltd, 2004
2. Principle of Weaving by R. Marks and A.T.C. Robinson, Textile Institute, 1986.
3. Woven Fabric Production – II (1st Edition) by NCUTE Publication, 2002.

References:

1. Preparation & Weaving Machinery by Ormerod A., Butterworth-Heinemann, 1983.
2. Mechanism of Weaving by Fox, Macmillan, 1894.
3. Fancy Weaving by Aswani K. T., Mahajan Book Distributors, 1990
4. Weaving Tech. & Operations by Ormerod A. and Sondheln W.S, Textile Institute, 1995.
5. Fabric Forming by Hasmukharai, B.S.S.M Institute of Textile Technology, Komarapalayam, Ero de, 1996.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTTX602	DCC	TEXTILE CHEMICAL PROCESSING II	60	20	20	30	20	3	0	2	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. Students will be able to use effectively principles and mechanisms of roller printing and rotary screen printing on textile goods according to their end use.
2. Students will be able to impart different types of fabric finish as per end use.
3. Students will be able to impart Flame Retardent finish on textile goods as per end use.
4. Student will be able to select eco- friendly chemicals.

Course Outcomes (COs)

Student will be able to

1. Apply different methods and style of printing on natural and synthetic fibre, fabric and blends.
2. Develop and design the printed products as per demand
3. Create different finished fabric according to their application.
4. Explain various types of dyeing, printing and finishing processes

Syllabus

Unit I: Introduction of Printing **9 h**

Introduction to printing, role of binder and thickener, rheology of printing paste; different methods of printing-block printing, screen printing, flat bed screen printing, rotary screen printing, roller printing, transfer printing; different styles of printing-direct printing, discharge printing, resist printing.

Unit II: Printing of Textile Materials **9 h**

Printing of cotton, jute, flax and viscose rayon fabric with direct dye, reactive dye, vat dye and azoic dye; printing of silk, wool and nylon fabric with reactive dye and acid dye; printing of polyester fabric with disperse dye, printing of textile material with

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BTTX602	DCC	TEXTILE CHEMICAL PROCESSING II	60	20	20	30	20	3	0	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** – Credit.
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pigment colors.

Unit III: Finishing **11 h**

Introduction to finishing of natural and man-made fiber; Classifications of various finishes, finishing materials - their chemistry and application; Padding mangles, drying ranges, stenter, calendaring, raising and milling machines. Permanent and semi-permanent finishes, Crease resistant finishing, softeners, silicon finishing, anti-shrink finishing, waterproof and water repellent finishing, flame proof and flame-retardant finishing, heat setting of synthetic fabrics.

Unit IV: Eco-friendly Textile processing **8 h**

Low wet pickup, foam finish, hydro-extraction, hazardous chemicals and dyes used in textile chemical processing and their treatment. Eco friendly processing, chemicals and their eco friendly substitutes.

Unit V: Effluent Treatment and eco system **8 h**

Textile industry and population, eco-friendly processing, chemicals and their eco-friendly substitutes. Hazardous chemicals and dyes, Effluent Treatment in textile industry.

List of Practical (Expand it if needed):

1. Study the process flow in textile printing.
2. Printing of cotton fabric sample with reactive dye.
3. Printing of silk fabric sample with acid dye.
4. Printing of wool fabric sample with acid dye.
5. Printing of polyester fabric sample with disperse dye.
6. Printing of cotton fabric sample with pigment color.
7. Printing of polyester fabric sample with pigment color.

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BTTX602	DCC	TEXTILE CHEMICAL PROCESSING II	60	20	20	30	20	3	0	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** – Credit.
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8. Printing of cotton fabric sample with discharge style of printing.
9. Printing of cotton fabric sample with resist style of printing.
10. Printing of silk fabric sample with resist style of printing.
11. Apply waterproof finishing on cotton fabric sample.

Textbook:

1. Shehnai, V. A., (1990) Technology of Textile Processing, Technology of Printing, Vol. 4.
2. Shehnai, V. A., (1990) Technology of Textile Processing, Technology of Finishing, Vol. 6.
3. Prayag, R. S. (1994) Textile Finishing.

References:

1. Bhagwat, R. S., Handbook of textile processing machinery, Colour Publications, 1999.
2. Choudhury, A. K. R., Principles of Textile finishing, Woodhead Publishing, 2017.
3. Schindler, W.D. and Hauser, P.J., Chemical finishing of textiles, Woodhead Publishing, 2004.

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BTTX 613	DSE	Statistics and Quality Control for Textile Industry	60	20	20	0	0	3	0	0	3

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 introduce the students with the Fundamentals of the Statistics used in the Textile Technology.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes. The students will be able to

1. Apply modern probability theory in the Textile Technology.
2. Understand and design the experiment, conduct statistical tests, and analyse the results to arrive at the conclusions.
3. Know the fundamental principles of the sample distribution.
4. Study the capability of process and control the process based on data available.
5. Make decisions with minimum error from available data.

Syllabus

Unit I Probability Distribution **9h**

Applications of Geometric, Binomial, Poisson, Normal and its approximations, T, Exponential, Chisquare, F and Weibull distributions.

Unit II Hypothesis Testing **9h**

Sampling distribution; significance tests applicable to textile parameters - normal test, t test, chi-square test and F test. Selection of sample size and significance levels with relevance to textile applications; acceptance sampling.

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BTTX 613	DSE	Statistics and Quality Control for Textile Industry	60	20	20	0	0	3	0	0	3

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Unit III Analysis of Variance and Design of Experiments **9h**

ANOVA for different models, test of significance – comparison with a control, global comparisons. Non-parametric test - Rank test, Concordance test. 2 k full-factorial designs, composite designs, robust designs, process optimization.

Unit IV Regression Analysis **9h**

Method of least squares – linear regression equation – correlation coefficient. Regression through origin – multiple regression. Confidence limits.

Unit V Control Charts **9h**

General principle of control charts – action and warning limits – interpretation of control charts. Control charts for variables and attributes – basis, development, interpretation, sensitizing rules, average run length. Cusum charts. Process capability analysis.

Textbooks:

1. Montgomery D.C., "Introduction to Statistical Quality Control", John Wiley and Sons, Inc., Singapore, 2002.
2. Leaf G.A.V., "Practical Statistics for the Textile Industry, Part I and II", The Textile Institute, Manchester, 1984.
4. Douglas C. Montgomery, "Design and analysis of experiments", John Wiley & Sons, Inc, Singapore, 2000.
5. Ronald D. Moen, Thomas W. Nolan, Lloyd P. Provost, "Quality improvement through planned experimentation', McGraw-Hill, 1998.

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BTTX 613	DSE	**Statistics and Quality Control for Textile Industry**	60	20	20	0	0	3	0	0	3

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***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

References:

1. Leaf G A V, "Practical Statistics for the Textile Industry", Part I and II, The Textile Institute, Manchester, 1984.
2. Montgomery D.C., "Introduction to Statistical Quality Control", John Wiley and Sons, Inc., Singapore, 2002.
3. Ronald D Moen, Thomas W Nolan and Lloyd P Provost, "Quality Improvement Through Planned Experimentation", McGraw Hill, 1998.
4. Meloun M and Militky J, "Statistical Data Analysis: A Practical Guide", Woodhead Publishing Ltd. UK, 2011.
5. J. R. Nagla, "Statistics for Textile Engineers", Woodhead Publishing India Pvt. Ltd., 2014.
6. Hayavadana J, "Statistics for Textile and Apparel Management", Woodhead Publishing Ltd., UK, 2012.

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BTTX623	DSE	NONWOVEN TECHNOLOGY	60	20	20	0	0	3	0	0	3

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 knowledge on the fundamentals of manufacturing process of nonwoven .
2. To provide knowledge on the technical requirements and the physical and mechanical properties of nonwoven fabrics

Course Outcomes (COs)

Student will be able to

1. Explain the importance of the nonwoven fabrics.
2. Develop the different web formation techniques of nonwovens.
3. Analyze the physical and mechanical bonding of nonwovens.
4. Explain the principle & manufacturing process of hydro entangled nonwoven fabrics.

Syllabus

UNIT I: Introduction of Nonwovens **6 h**

Historical background of nonwovens, definition, stages in Nonwoven manufacturing, Web Forming Techniques: carding parallel laid web and cross laid web. Classification of nonwoven – on the basis of use, manufacturing process, web formation and bonding.

UNIT II: Webs Formation Techniques **8 h**

Dry laid webs -fibre selection, fibre preparation, web formation and layering. Wet laid web - raw materials, production process, special features of the wet laid process and its product. Polymer laid webs- raw materials, production process-spun laid and melt blown.

UNIT III: Nonwoven Bonding Techniques **12h**

Mechanically bonded webs - needle punched nonwovens and its applications; stitch bonded nonwovens and its applications; Hydro entangled nonwovens, advantages and disadvantages, Bonding process, water system, web drying, properties of spun laced

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTTX623	DSE	NONWOVEN TECHNOLOGY	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** – Credit.
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webs, applications. Thermally bonded nonwovens - binder, binding fibers, binding powder, binding webs; methods of thermal bonding - hot calendaring, belt calendaring, oven bonding, ultrasonic bonding, and radiant heat bonding. Chemical bonding - binder, method and application.

UNIT IV: Nonwoven Fabric Finishing **8 h**

Introduction to nonwoven fabric finishing, Wet finishing, Application of chemical finishes – antistatic agents, antimicrobial finishes, flameproof finishes, waterproof finishes, etc.; methods of applying chemical finishes; Mechanical finishing, surface finishing. Elementary idea of production of laminated and composite nonwoven material.

UNIT V: Characterization and Testing of Nonwoven **11 h**

Characterization of nonwoven fabrics, Characterization of fabric bond structure, Fabric weight, thickness, density and other structural parameters, General standards for testing nonwovens, Measurement of basic parameters, fibre orientation distribution, porosity, pore size and pore size distribution, tensile properties, gas and liquid permeability, water vapour transmission, wetting and liquid absorption, thermal conductivity and insulation.

Textbooks

1. Nonwoven Process Performance & Testing by Turbak, TAPPI Press, 1993.
2. Handbook of Non-wovens by Stephen Russell, Woodhead Publishing Ltd., UK, 2007.
3. Nonwoven bonded fabrics by Lunenschloss and Albrecht, Halsted Press, 1985.

References:

1. Manual of Nonwovens by R. Krecma, The Textile Trade Press, Manchester, UK, 1971.
2. Thermal Bonding of Nonwoven Fabrics, Textile Progress 26 (2), 1-38, 1995.
3. Developments in Nonwoven Fabrics, Textile Progress, Vol. 12, No. 4, The Textile Institute, Manchester, UK, 1983.

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BTTX 728	DSE	ENGINEERING OF TEXTILE STRUCTURE	60	20	20	0	0	3	0	0	3

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. Course will provide the theoretical aspects for the development of yarn and woven fabric structure.
2. Course will provide the various theoretical model for predicting the behavior of the yarn and woven fabric.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills, and attitudes. The students will be able

1. To remember the mathematical relationship in formulating the various properties of yarn and woven fabrics.
2. To identify and analyse the complex behaviour of yarn and woven fabric structure.
3. To understand the fundamentals of fiber migration.
4. Demonstrate their skill in the R&D of textile products.

Syllabus

Unit-I Yarn Geometry — 10 h

Ideal yarn geometry, yarn diameter and yarn count, density, specific volume, relationship of yarn count and twist factor, twist angle, twist contraction and retraction, packing of fibers, ideal packing, packing fraction, close and open packing of fibers, optimum level of twist.

Unit-II Mechanics of Yarn Structure — 9 h

Effect of twist on yarn strength, stress-strain curve, young's modulus, mechanics of yarn structure, tensile behavior of staple yarn, tensile behavior of continuous filament yarn, low strain and large strain model.

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BTTX 728	DSE	ENGINEERING OF TEXTILE STRUCTURE	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** – Credit.
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Unit-III Fiber Migration **7 h**

Fiber migration, Mechanism of migration, Condition for migration to occur, Effect of migration in yarn structure, Morton's view of fiber migration in yarn, Migration in blended yarn.

Unit-IV Cloth Setting Theories **9 h**

Woven cloth setting theories, elements of woven fabric geometry, fabric cover and fractional cover, cover factors and its relationship with fabric weight.

Unit-V Fabric Geometry **10 h**

Pierce's simple geometry of plain weave, derivation of basic equations, practical application of cloth geometry, crimp interchange, Translation of fiber and yarn properties into fabric properties.

Textbooks:

1. The geometry of cloth structure by F T Peirce, Journal of Textile Institute, 1937.
2. Structural Mechanics of Fibers, Yarns and Fabrics by Hearle, Grosberg and Backer, John Wiley and Sons Inc., 1969.
3. Textile Yarn- Technology, Structure and Applications by Goswami, Martindale, and Scardino, 2010.

References:

1. Watson's Textile Design and Color, by Grosicki, Newness Butterworthy, 1988.
2. Structure and Mechanics of woven fabrics by Jinlian Hu, CRC Press, 2004.
3. Structure and mechanics of Textile Fiber Assemblies by P. Schwartz, Woodhead Publishing, 2008.
4. Woven Textile Structure-Theroy and Applications by Behara and Hari, CRC Press, 2010.
5. Theory of structure of yarn by B Neckar and D Das, Woodhead Publishing, 2018.

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BTTX614	DSE	PROCESS CONTROL IN SPINNING AND WEAVING	60	20	20	0	0	3	0	0	3

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 outline the areas of process control in spinning and weaving technology.
2. To relate the importance of process control for achieving the desired quality and defect free product.
3. To illustrate the concepts of machinery audit and energy audit, machine maintenance, modern methods of house-keeping and material handling and different standard norms for various processes of the textile industry.

Course Outcomes (COs)

Student will be able to

1. Construct process maps for different processes involved in spinning and weaving technology.
2. Identify necessary process control check-points, so that these processes can be run at an optimum level of productivity.
3. Summarize the reasons for generation of different types of defects in the final product.
4. Demonstrate their skills in process inspections, machinery maintenance, machinery audit, energy audit.
5. Describe the modern methods of house-keeping and material handling.

Syllabus

UNIT I: Process Control in Mixing, Blow Room and Carding Operations

Introduction, key variable of process control, standard norms collection and interpretation of data, control of mixing quality and cost, waste and cleaning in blowroom, location of substandard machines in blowroom. Bale management techniques, Process control in carding.

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BTTX614	DSE	PROCESS CONTROL IN SPINNING AND WEAVING	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** – Credit.
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UNIT II: Process Control in Drawing, combing, and speed frame operations

Process control in drawing: key elements, common problems; Process control in combing: key elements, common problems; Process control in speed frame operations: key elements, and common defects related to the process. Key variables in productivity and reasons for loss of productivity.

UNIT III: Process Control in Ring Spinning

Control of yarn count; strength; evenness, imperfections, and yarn faults. Control of end breaks, twist variation, fly generation, and yarn realization in ring spinning. Key variables in productivity and reasons for loss of productivity.

UNIT IV: Process Control in Weaving

Control for quality, machine stoppage, and productivity in winding, warping, sizing, pirn-winding, and weaving; Calculations of production efficiency and machine allocation in windings; warping, pirn winding, sizing, and loom shed; Standard norms for setting, speeds, and production rates. Fabric defects and their control. Control of hard waste and its norms in various processes.

UNIT V: Maintenance and Machine Audit

Importance and types of maintenance, Maintenance schedule in blow room, carding, comber, draw frame, speed frame, ring frame, winding, warping, sizing, and loom shed. Concept of machinery audit and energy audit. House-keeping and material handling, statistical interpretation of data and waste control, Snap study and case studies.

Textbooks

1. Process control in textile manufacturing, Abhijit Majumdar et al (Eds.), Woodhead Publishing, 2013.
2. Process control in spinning, R Senthil Kumar, CRC Press, 2015.

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***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

References:

1. Process Control in Spinning by A R Garde, T A Subramanian, ATIRA, 1987.
2. Process Control in Spinning by M C Paliwal, ATIRA, 1983.
3. A practical guide on quality management in spinning by B. Purushothama, Woodhead Publishing India Pvt. Ltd, 2011.
4. Handbook on fabric manufacturing by B. Purushothama, Woodhead Publishing India Pvt. Ltd, 2016.
5. Solutions to Problems in the Textile and Garment Industry by B. Purushothama, Woodhead Publishing India Pvt. Ltd, 2015.
6. Handbook on Cotton Spinning Industry by B. Purushothama, Woodhead Publishing India Pvt. Ltd, 2015.
7. Norms for Textile -ATIRA, BTRA, SITRA, NITRA
8. Yarn Waste Control in Textile Mills - (Revised) BTRA Pub.
9. Weaving Productivity Standards and Method of Evaluation - BTRA (Edition 1982)

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BTTX624	DSE	MAN-MADE FIBER TECHNOLOGY	60	20	20	-	-	3	0	0	3

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 knowledge on the fundamentals of manufacturing process of man-made fibers, polymerization and raw materials
2. To provide knowledge on the technical requirements and the physical and mechanical properties of man-made fibers.

Course Outcomes (COs)

Student will be able

1. Explain the importance of the man-made fibers.
2. Solve the problems occurred during manufacturing of man-made fibers.
3. Effects of process parameters on structure and properties of man-made fibers.
4. Analyze the physical and mechanical behaviour of man-made fibers.
5. Explain the principle & manufacturing process of Polymerisation, Melt spinning, Dry Spinning and Wet Spinning Process.

Syllabus

UNIT I: INTRODUCTION TO MAN-MADE FIBERS **12h**

Definition of made fibres. Brief history of manmade Fibres. Relative merits and demerits of manmade fibres and natural fibres. Basic production systems of the man-made fibre. Melt spinning, solution dry spinning and solution wet spinning. Factors influencing selection of a Particular process for fiber formation, Relative merits and demerits of melt, dry and wet spinning processes,

UNIT II: CONVERSION OF POLYMERS INTO FIBRES AND MELT SPINNING **12h**

Raw material, technology of polymerization and extrusion of polyester, nylon 6, nylon 66 and polypropylene. Variables of spinning, Different components of spinning process,

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BTTX624	DSE	MAN-MADE FIBER TECHNOLOGY	60	20	20	-	-	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** – Credit.
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i.e., extruder, gear pump, filters, manifold, spinning head, quenching chamber, winders. Different Quenching/solidification techniques, spinning of Polyester staple fibres (PSF) Technology and filaments. POY, and FDY Technology. High speed spinning. Effect of process parameters on structure and properties of melt spun filament.

UNIT III: SOLUTION: DRY SPINNING **8h**

Dry spinning of cellulose acetate. Acetylation of cellulose, Dope Preparation and spinning of cellulose diacetate and triacetate, Dry spinning of acrylic. Effect of process parameters on Structure and properties of solution dry and wet spun filament.

UNIT IV: SOLUTION: WET SPINNING **6h**

Process flow diagram and significance of each step for solution wet-spinning of viscose rayon. Chemistry of viscose rayon formation process, Influence of various additives and temperature of the regeneration bath and their influence on the process and properties of viscose rayon. Effect of process parameters on Structure and properties of solution dry and wet spun filament.

UNIT V: DRAWING, HEAT SETTING OF FIBRES **7h**

Object of drawing. Concept of neck drawing, Effect of drawing conditions on the structure and properties of fiber. Objective of heat setting. Effect of heat setting parameters on the structure and properties of fiber. Objective, properties and application of spin finish for PSF, POY and FDY

Textbooks:

1. "Manufactured Fibre Technology", 1st Ed. V B Gupta and V K Kothari, 1st Ed., Chapman and Hall, London,1997.
2. Vaidya A A, "Production of Synthetic Fibres", 1st Ed., Prentice Hall of India, New Delhi,1988.

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BTTX624	DSE	MAN-MADE FIBER TECHNOLOGY	60	20	20	-	-	3	0	0	3

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3. Macintyre J E, "Synthetic Fibres", Wood head Fiber Science Series, UK,2003.

References:

1. "Hand Book of Fibre Chemistry", Ed. M Lewin and E M Pearce, Mercel Dekker Inc.,1998.
2. Mark H F, Atlas S M, Cernia E, "Man Made Fibre Science and Technology", 1st Ed.,Vol.1, 2, 3, Science Publishers, New York,1967.

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BTTX634	DSE	WOOL TECHNOLOGY	60	20	20	0	0	3	0	0	3

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 Objective (CEOs):

1. The course will introduce the students to the knowledge of processing wool fibers and worsted manufacturing process to the extent of understanding the difference of the normal manufacturing process and woolen process.

Course Outcomes (Cos):

Students will be able to:

1. Choose suitable raw wool with the necessary properties for the manufacturing of the desired quality of woolen/worsted yarn or fabric.
2. Demonstrate their skills in manufacturing of different types of recycled, woolen, semi-worsted and worsted yarn of desired quality standards from a given variety of fibres.
3. Design various types of woolen/worsted fabrics of required quality characteristics by manipulating constituting yarn properties and fabric constructions.
4. select suitable dyes, chemicals and auxiliaries and also perform different chemical processes of wool in fibre, yarn or fabric form.
5. Demonstrate their skills in carrying out different mechanical and chemical finishing of woolen/worsted fabrics.

Syllabus

UNIT I Wool fibre and its properties **8 h**

Morphological structure, components of fibre, fibre diameter, fibre contour, crimp, length, luster, specific gravity and refractive index, moisture relations, wet ability, fibre mechanical properties, gross composition of raw wool, molecular structures.

UNIT II Blending of wool with manmade fibres **8 h**

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BTTX634	DSE	WOOL TECHNOLOGY	60	20	20	0	0	3	0	0	3

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.

Purpose of blending, effect of blend composition on performance of fabrics. **Woolen or carded Yarns**: Preliminary processes, blending or mixing, oiling of the stock, woolen carding, woolen spinning, yarn number and wool grade.

UNIT III Worsted top making and spinning of worsted yarn 9 h

Worsted carding, backwashing, oiling, gilling or preparing, worsted combing, tow-to-top conversion systems, worsted drawing, worsted yarn spinning, norms and modern developments.

UNT IV Manufacture of woolen fabrics 8 h

Woven Fabrics produced by projectile and rapier weaving machines, knitted and nonwoven woolen fabrics, use of FAST in worsted garment manufacturing.

UNT V Chemical Processing 12 h

Objects and different methods of carbonizing of wool batch and continuous methods of scouring fibre, yarn and fabric; peroxide and per-acetic acid bleach of wool; production of anti-shrink wool, basic principle of treatment and parameters; dyeing, printing and finishing, Wool Dyeing: Chemistry of dyeing wool and blend with acid, mordant, metal-complex and reactive dyes, Top and tip dyeing of wool. Wool Finishing: Scooping, damping, decatising and paper pressing of wool, Testing and Quality Control.

Textbooks

1. Lepenkov Y, "Wool Spinning", Vol. 1and 2, 1st Ed. Mir Publisher, Moscow, 1983.
2. Bergen W V, "Wool Handbook," vol.1 and 2, 3rd Ed., Interscience publisher, London.
3. Teasdale D C, "The Wool Handbook", 4th Ed., 1996.

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BTTX634	DSE	WOOL TECHNOLOGY	60	20	20	0	0	3	0	0	3

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.

References:

1. Blended Textiles, Textile Association (India), 1981.
2. Trotman E R, "Dyeing and Chemical Technology of Textile Fibres", Charles Griffin and Co. Ltd., London, 1975

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Vishwavidyalaya, Indore

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Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav Institute of Textile Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
B. Tech. in Textile Engineering (2023-2027)

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*				
BTTX605	SEC	APPAREL QUALITY CONTROL	0	0	0	0	50	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. Students will have knowledge about garment quality control during garment manufacturing process.
2. Student can assess the functional and aesthetic properties of fabric as per their application & requirement.

Course Outcomes (COs)

Student will be able

1. To understand and monitor process of quality control in garment industry..
2. To assess the effect of thread tension on the seam strength.
3. To solve problem occur during garment inspection.
4. To improve the quality of garment manufacturing process.

List of Practical's :

1. Determination of apparel seam strength and seam slippage.
2. Determination of stretch and recovery of knits and stretch denim.
3. Determination of apparel dimensional stability.
4. Determination of button impact, button and snap pull strength.
5. Determination of zipper endurance & zipper puller, crosswise strength.
6. Determination of colour fastness properties – perspiration & rubbing fastness
7. Identification of fabric defects, inspection of fabric defects on 4 point and 10 point systems basis.
8. Identification and preparation of different types of care labels on paper.
9. Identification of defects in garment preparation, shape, size & fit, final inspection of the garment.
10. Complete analysis of at least two branded garment for construction and prepare a detailed speck sheet.
11. Construction of garments using the same spec-sheet details to replicate the sample analyzed.

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References:

1. Managing Quality in the Apparel Industry - Pradip V. Mehta, S. K. Bharadwaj
2. Progress in Textiles Science and Technology Vol.I Testing and QM; V. K. Kothari
3. Knitted Clothing Technology - Terry Brackenbury
4. Sewing for fashion Design, Relis, Nuris and Strauss Gail, PHI 1997
5. Innovation and technology of woman's intimate apparel, Yu W Fan J & Harlock S C, Woodhead.

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