Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Textile Technology

Choice Based Credit System (CBCS) Scheme in the Light of NEP- 2020

Diploma in Textile Engineering (2021-2024)

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*				
DTTX601	DCC	Textile Finishing	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 preliminary knowledge about the Textile finishing process.
2. To impart conceptual knowledge about different mechanical and chemical finishes.
3. To demonstrate various finishing process for imparting aesthetic and functional properties.

Course Outcomes (COs)

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

1. Describe the importance of finishing process to add functionality in fabrics.
2. Differentiate various mechanical and chemical finishes.
3. Understand mechanism of various textile finishing.
4. Identify various finishing agents suitable for woolen textile materials.
5. Understand the need to finish on synthetic materials.

Syllabus

Unit I Introduction — 7 Hours

Introduction and objectives of finishing, Importance of textile finishing, Need, Classification of finishing processes: Mechanical and chemical finishing, temporary, semipermanent, and permanent finish; Advantages and limitations of finishing process.

Unit II Mechanical finishing — 11 Hours

Need and importance of mechanical finishing; Calendering, Swizzing, Friction, Chasing, Shreinering calenders; Raising, Shearing, Sanforisation; Drying: Multicylinder drying, Hot air drying; Construction and working of stenter.

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DTTX601	DCC	Textile Finishing	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.

Unit III Chemical finishing **11 Hours**

Need and importance of chemical finishing; Different types of chemical finishing on cotton and other cellulosic fabrics: Crease resistant finishing; Finishing with softeners, Silicone finish, Water proof and water repellent finish; Flame retardant finish ; antimicrobial finish.

Unit IV Finishing on wool **8 Hours**

Need for wool finishing; Milling: Acid milling, alkaline milling, grease milling, soap milling; Shrink resistant processes: Wet chlorination, dry chlorination; setting of woolen fabric: crabbing, potting, decatising.

Unit V Finishing on synthetic textiles **8 Hours**

Need for finishing of synthetic textiles; Heat setting: Need, mechanism and machine used for heat setting; Antistatic finish; soil release finish; delustering; coating and laminating.

Textbooks:

1. Chemical finishing of Textiles, W.D. Schindler, P.J. Hauser, Woodhead Publishing, 2004
2. Technology of Finishing, V A Shenai, N M Saraf, Sevak Publications, Bombay, 1996
3. Textile Finishing, R. S. Prayag, Shree J. Printers, 1998.

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			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTTX602	DCC	ADVANCED YARN FORMING 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. Course will provide knowledge about the limitation of ring spinning system and its versatility.
2. Course will provide detailed knowledge about the manufacturing of rotor yarn and its structure.
3. Course will provide introductory knowledge about the other advanced yarn manufacturing system.

Course Outcomes (COs): After completion of this course, the students are expected to be able to demonstrate the following knowledge, skills, and attitudes. The students will be able.

1. Demonstrate their knowledge of the limitation of the ring spinning system and the development of an advanced yarn system.
2. Describe the yarn production on rotor spinning system.
3. Understand the concept of air jet, friction and other spinning systems of yarn production.
4. Justify the importance of doubling for different types of yarn and will also be able to evaluate the quality aspects of doubled yarn.

Unit I: Limitation of Conventional Spinning **8 h**

Compact Spinning Overview, Limitations of conventional methods of spinning, Developments in ring spinning to overcome such limitations. Overview of different new spinning processes and their possibilities and limitations.

Unit II: Rotor Spinning **10h**

Objects, Operating Principle and construction, Raw material requirements and preparation, Method of operation, Yarn formation, aspects of the rotor and its influence on yarn, Calculation related to twist, production etc. Yarn Structure, Rotor yarn characteristics and its comparison with ring spun yarn, End use of yarn.

Unit III: Air Jet Spinning **9h**

Operating Principle and construction, Raw material requirements and preparation, Method of operation, Yarn characteristics, and yarn structure, Comparison with ring spun yarn, inter-relationships in spinning technology, End use of yarn.

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DTTX602	DCC	ADVANCED YARN FORMING 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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Unit IV: Friction Spinning and Other Spinning Systems **9h**

Brief Idea about other spinning technology such as Wrap spinning, Air vortex spinning, Dref, Plyfil, Parafil, etc. Principle, Raw material requirements, Yarn structure and its comparison with ring spun yarn, End uses of yarn.

Unit V: Yarn Doubling **9h**

Objectives, Types of doubling, Feed material preparation, Constructional details and theory of ring doubling and TFO, developments in TFO, Calculation of production, and twist, General idea of material and package faults and their remedies, environmental condition, and supervisory checkpoints.

Textbooks:

1. The Rieter Manual of Spinning Vol. V, W Klein, Rieter Machine Works Ltd. 2016.
2. The Rieter Manual of Spinning Vol. VI, W Klein, Rieter Machine Works Ltd. 2016.
3. Two-For-One – Technology & Technique for spun yarn, HS Kulkarni and HVS Murthy, Tecoya Trend, 1992.
4. Handbook on Cotton Spinning Industry, B. Purushothama, Woodhead Publishing India, 2016.

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DTTX603	DCC	Advance Fabric Forming 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. Course will provide knowledge about the working mechanisms of shuttleless looms.
2. Course will provide the knowledge about Filament weaving.

Course Outcomes (COs):

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

1. Understand different types of shuttle less loom and their advantages and disadvantages.
2. Describe the working mechanisms of projectile weaving.
3. Describe the working mechanisms of rapier weaving.
4. Describe the working mechanisms of air jet weaving.
5. Describe the working mechanisms of waterjet weaving.

Syllabus

UNIT I: Introduction to Shuttle less Loom: **10 HRS**

Comparison of shuttleless weaving with shuttle weaving, limitations of shuttle loom, Introduction to different weft insertion systems on shuttleless weaving machines, common features of shuttleless weaving machines, Advantage and Disadvantage of shuttleless loom, weft accumulators and weft measuring devices used in shuttleless weaving,

UNIT II: Projectile Weaving: **9HRS**

Various features of projectile loom, weft insertion cycle of projectile loom, torsion bar picking mechanism, matched cam beat up mechanism, calculations regarding no. of projectile required for different widths of projectile loom.

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DTTX603	DCC	Advance Fabric Forming 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.

UNIT III: Rapier loom: **8HRS**

Classification of rapier looms, yarn transfer systems in different rapier looms. Two phase rapier – their types and working, weft insertion cycle of rapier looms – Dewas system, rapier drives for rigid rapiers and flexible rapier.

Unit-IV: Air Jet loom: **7HRS**

Principles of air jet weft insertion loom, weft insertion cycle of Air jet loom, different traversing aid used in air jet loom, need of traversing aid in air jet loom, air quality with respect to air jet loom.

UNIT V: Water Jet loom: **8HRS**

Principles of water jet weft insertion and their comparison with air jet loom, weft insertion cycle of water jet loom, Essential requirements of filament weaving – modifications required in loom and loom shed.

Textbooks:

1. Weaving Machines, Mechanisms and Management by Talukdar M. K., Ajgaonkar D. B. and Sriramulu P. K. Mahajan Publishers Pvt Ltd, 2004.
2. Weaving Tech. & Operations by Ormerod A. and Sondheln W.S, TheTextile Institute, 1995
3. Shuttleless Weaving Machines by Oldrich Talavasek and Vladimir Svaty, Elsevier Science Ltd, 1981.

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DTTX604	PW/I	Major Project	-	-	-	60	40	0	0	4	2

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 exposure to the students to the method of the practical training and project through literature review and analysis of a particular problem.
2. To provide the students' knowledge about the latest instrument and machinery in the institute as well as various research laboratory and industry.

Course Outcomes (COs)

Student will be able to:

1. Apply the knowledge to study a particular problem.
2. Analyze and solve the problem occurred during their research work.
3. Create an aptitude for research work.

Course Contents:

1. Each student will work in the institute lab / outside practical training and project/industry institute to study and conduct their research work.
2. The student performs their project work to a particular project topic under the guidance of the faulty guide allotted to them.
3. Each student must give two power point presentations during the semester in front of the faculty members.
4. At the end of the semester each student will be required to submit a report of their work done during the semester which will be assessed by their guide for the internal valuation. The students are also required to appear in the end semester.

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DTTX615	DSE	Textured Yarn Production	60	20	20	00	00	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 basic knowledge about the manufacturing process of textured yarns.
2. To understand the basic principles of air textured yarn and to find the applications of textured yarn.

Course Outcomes (COs):

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

1. Understand the importance of texturing for manmade fibers and basic working principle of texturing process.
2. Describe the false twist texturizing process and properties of such yarn.
3. Describe the draw texturizing process and properties of such yarn.
4. Describe the air-jet texturizing process and properties of such yarn.
5. Analyze the physical and mechanical behavior of Textured yarns and identify their suitable application.

Syllabus

UNIT I: Introduction of Texturizing 9 h

Objective of texturizing, Drawbacks of flat filament yarns, requirement of raw material for texturizing, drawing process. Definition and concept of texturizing, Classification and characteristics of texturizing process and texturized yarn.

UNIT II: False Twist Texturizing 9 h

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DTTX615	DSE	Textured Yarn Production	60	20	20	00	00	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.

Definition and Methods of production of False Twist Texturizing method, production of stretched (single heater) and modified stretched (double heater) yarns by conventional methods. Properties of such yarn.

UNIT III: Draw Texturizing **9 h**

Definition of Draw texturizing, Concept and process of sequential and simultaneous draw texturizing, Study of simultaneous draw texturizing process. Properties of the yarn.

UNIT IV: Air-Jet Texturing **9 h**

Definition of Air Jet Texturizing, Concept, and process of Air Jet Texturizing. Properties of the yarn.

UNIT V: Quality and Process Control **9 h**

Testing of texturized yarn, Denier, Tensile properties, Crimp properties. On-line tension (OLT) control and gradation system. Classification of Physical defects, inspection procedure and gradation.

Textbooks:

1. Hearle J.W.S., Hollick L. and Wilson D.K., Yarn Texturing Technology, Woodhead Publishing, U.K., 2001.
2. Goswami B.C., Martindale, J.G., Scardino F.L., Textile Yarn Technology Structure and Application, Wiley Publication, U.S.A., 1977.
3. Wilson D.K. and Kollu T., Production of Textured Yarns by the False Twist Technique-Textile Progress, Vol. 21, No.3, Textile Institute, U.K.,1991.

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DTTX 625	DSE	Theory of Colour and Computer Colour Matching	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. Impart knowledge on colour and chemical constitution.
2. Demonstrate about various theories of colour.
3. Demonstrate about working of computer colour matching instrument.

Course Outcomes (COs):

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

1. Understand various theories of colour.
2. Describe the concept of color perception by human eye.
3. Explain different color order system describing the color.
4. Understand construction and working of computer colour matching instruments.
5. Analyse and interpret the results obtained from spectrophotometer.

Syllabus

UNIT I: Colour Theory **9 HOURS**

Additive and subtractive system, Trichmoaticity, Opponent theory. Instruments for the measurement of the colour of transparent and opaque objects. Source of natural light, sources of artificial light, CIE illuminants, Absorption & scattering of light. transmittance, Optical density, Relationship between hue, value and chroma.

UNIT II: Colour Perception **9 Hours**

Basic concept of colour perception, construction of human eye, brief idea about the relation between colour and chemical constitution. Various causes of colour generation.

UNIT III: Visual Description of Colour **9 HOURS**

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DTTX 625	DSE	Theory of Colour and Computer Colour Matching	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.

Visual description of colour, colour order systems, types, their utility and limitations, detailed description of Munsell colour order system.

UNIT IV: Physical Aspects of Colour **9 HOURS**

Additive and subtractive mixing of colour, Interaction of light with object – reflection, transmission and scattering, factors governing transmission, Beer-Lambert law, scattering of light, Kubelka-Munk function. Concept and definition of light sources, illuminant and colour temperature. Various light sources and corresponding illuminants. Colour rendering index,

UNIT V: Color Measurement and Parameters **9 HOURS**

Colour measuring instruments – colorimeters, spectrophotometers and their components. Measuring geometry, Standard observer colour matching functions. Tristimulus values. Chromaticity coordinates. Metamerism. Whiteness & Yellowness Indices, Computer aided Colour matching and recipe prediction. CIE L*a*b*, CIE L*c*h*, CIE colour space, DE, DE CMC. Measurement conditions. CCM applications and reports for QC. Shade correction.

Textbooks:

1. R. McDonald, Colour Physics for Industry, Society of Dyers and Colourists, Bradford, UK , 1997
2. A.K. Roy Choudhury, " Modern Concept of Color and Appearance" published jointly by Science Publishers, Inc., Enfield, NH 03748, USA, and Oxford & IBH Publishing Co. Pvt. Ltd.New Delhi, 2000.
3. M L Gulrajani, Colour Measurement: Principles, advances and industrial applications. Edited by Woodhead Publishing Series in Textiles No. 103, ISBN 1 84569 559 3, 2010.

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			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTTX635	DSE	APPAREL MERCHANDISING	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 the knowledge about the Apparel Merchandising
2. To impart conceptual knowledge for the Merchandising
3. To understand marketing management for business expansion.

Course Outcomes (COs)

Student will be able:

1. To explain their knowledge in apparel manufacturing process.
2. To identify a suitable market situation.
3. To apply their knowledge on the various functions of the merchandiser and make merchant plan.
4. To understand the concept of international marketing.
5. Use their knowledge for managing the apparel merchant activity.

SYLLABUS

Unit I Apparel Manufacturing Process **9h**

Apparel construction techniques - Drafting & Patten making. Machinery & Equipment - Cutting, Sewing and finishing. Garment label & folding, Garment packing. Quality issues in apparel.

Unit II Marketing Management **9h**

Definition of Marketing Management, its function and objectives, types of market, classification of product, marketing mix, retain buyer, elements of cost.

Unit III Merchandising Process **9h**

Merchandising, Main merchandising functions, factors affecting merchandising, visual merchandising, roles and responsibilities of a merchandiser, seasonality of marketing.

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Choice Based Credit System (CBCS) Scheme in the Light of NEP- 2020

Diploma in Textile Engineering (2021-2024)

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*				
DTTX635	DSE	APPAREL MERCHANDISING	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.

Unit IV International Marketing **9h**

International Marketing: Nature and Scope of International Marketing, timing, international sourcing, Licensin/franchising.

Unit V Marketing of Apparel and Iintroduction of Export **9h**

Marketing of apparel, Exporting, functions of export house, Competitive position of Indian Garment Exports, Export Promotion schemes and measures in India.

Text Books:

1. Principles of marketing, Philip T. Kotler, Gary Armstrong, Prafulla Agnihotri, Pearson Education, Seventeenth edition, 2018.
2. Export Management, Khurana, P.K , Galgotia publishing house, 2001.
3. Technology Of Clothing Manufacture, Carr & Lathams, 4th Edition, Wiley – Blackwell Publishers, 2008

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