Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Name of Program: B.TECH (Textile Engineering):2018-19

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*				
BTTX701	DCS	ADVANCE YARN MANUFACTURING	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 knowledge about the limitation of ring spinning system and its versatility.
2. Course will provide detail knowledge about the manufacturing of rotor yarn and its structure.
3. Course will provide introductory knowledge about the other advance yarn manufacturing system.

Course Outcomes (COs)

Student will be able to

1. Demonstrate their knowledge on the limitation of ring spinning system and development of advance yarn system.
2. Identify, analyse and design of rotor yarn production system.
3. Recall the knowledge of air jet and wrap spinning system

Syllabus:

Unit I: Limitation of Ring Spinning and Innovation in Spinning

Limitations of conventional methods of spinning, Developments in ring spinning to overcome such limitations. Summary of different new spinning process and their possibilities and limitations;

Unit II: Rotor Spinning

Overview, objects, developments, principle and speed; Raw material requirements and preparation; Method of operation - opening unit, yarn formation, structure and aspects of rotor and its influence on yarn, yarn withdrawal and winding system, automation. Calculation related to twist, production etc.

Unit III: Rotor Yarn Characteristics

Structure and its difference with ring spun yarn, brief idea about the end products; Production of fancy yarn/core spun yarn in rotor spinning.

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Unit IV: Air Jet Spinning

Principle, raw material requirements, yarn characteristic & structure of air jet spun yarn, comparison with ring spun yarn, inter-relationships in spinning technology, end use of yarn. Principle of air vortex spinning. Difference between air jet spun and air vortex spun yarn structure.

Unit V: Friction Spinning and other Spinning Techniques

Principle, raw material requirements, yarn structure and its comparison with ring spun yarn, end uses of yarn. Assessment of DREF-II & DREF-III yarn structure and properties. Brief Idea about Wrap spinning, plyfil, parafil, disc spinning, rubbing technique, repco, electrostatic spinning, adhesive process like bobtex and twist less spinning etc.

References:

1. The Textile Institute-Short Staple Spinning, Series-Klein. (Vol.5) Spinning - P.R.Lord
2. New Spinning Systems - R.V. Mahendra Gowda (NCUTE Pub.)
3. Handbook of yarn production, Peter R. Lord, Woodhead 2003
4. Spinning in 70's - P.R. Lord
5. Rotor Spinning-ATIRA
6. Cotton Spinning calculatious -Taggart.
7. Recent Advances in Spinning Technology - BTRA International Technical Conference Report
8. Yarn Production Theoretical Aspects, P Grosberg, C Iype, Woodhead 1999

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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
BTTX702	DCS	ADVANCE FABRIC MANUFACTURING	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 knowledge about the working mechanisms of shuttleless looms.
2. Course will provide the knowledge about Filament weaving.
3. Course will provide the introductory knowledge about multiphase weaving, circular weaving and triaxial weaving.

Course Outcomes (COs)

Student will be able to

1. Describe the working mechanisms of shuttleless looms and can produce fabrics as per desired quality and specifications.
2. Adjust and modify the weaving machines for Filament weaving correctly.
3. Describe the working of multiphase weaving, circular weaving and triaxial weaving.

Course Contents:

Unit I: Introduction of shuttleless loom

Comparison of shuttleless weaving with shuttle weaving, Introduction to different weft insertion systems on shuttle less weaving machines, weft accumulators and weft measuring devices used in shuttleless weaving. Essential requirements of filament weaving.

Unit II: Sulzer projector loom

Introduction, feature projectile guides, projectile feeding mechanism, weft insertion cycle of projectile loom, torsion bar picking mechanism, matched cam beat up mechanism, No. of projectile required for different widths of projectile loom.

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Unit III: Repier Loom

Introduction, different types and features, yarn transfer systems in different rapier looms. Two phase rapier, weft insertion cycle of rapier looms, rapier drives for rigid and flexible rapier.

Unit IV: Jet Loom

Principles of air and water jet weft insertion and their comparison, weft buckling, weft insertion cycle of Air jet loom, different traversing aid used in air jet loom, weft insertion cycle of water jet loom.

Unit V: Triaxial and narrow Loom

Introduction to triaxial and narrow fabric weaving; Modern development of other loom.

References:

1. Shuttleless Weaving - Dr. M. K. Talukdar
2. Principle of Weaving - Marks & Robinson
3. Textile Science & Technology Shuttleless Weaving Machines Oldrich, Talavasek & Vladimir Svaty
4. Modern Preparation and Weaving Machinery - A. Ormerod.
5. Hndbook of Weaving, Sabit Adanur, Ph. D.
6. Weaving Technology & Operation - A. Ormerod & Walter S. Sondhelm
7. Rapier Loom - WIRA
8. Filament Weaving NCUTE HRD Programme Coordinator Prof. P.A.Khatwani, Mr. S. S. Yardi,
9. Innovations in Weaving Machinery - (The Course of Loom Development) - Dr. Teruo Ishila
10. Modern Weaving Theory & Practice- R. B. Singh

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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*				
BTTX703	DCS	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 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 fiber fabric and blends.
2. Develop and design printed products as per demand
3. Create different finished fabric according to their application.
4. Explain various types of dyeing, printing and finishing processes

Course Contents:

Unit I: Introduction of Printing

Introduction to printing, different methods of printing-block printing, manual screen printing, flat bed screen printing, rotary screen printing, transfer printing, different styles of printing-direct printing, discharge printing, resist printing. Detailed study of different types of printing machines e.g. block, flat screen, roller and rotary screen printing.

Unit II: Modern development.

Different modern techniques of printing; pigment printing, role of binder and thickener, rheology of printing paste, 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; After treatment of different printing materials.

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Unit III: Finishing

Introduction to finishing of natural and man-made fiber fabrics; 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, water proof and water repellent finishing, flame proof and flame retardant finishing, heat setting of synthetic fibre fabrics, finishing of wool, Textile preservatives

Unit IV: Eco-friendly Textile Processing

Low wet pickup, foam finish, hydroextraction, 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

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 of detail process flow in textile printing
2. Printing of cotton fabric sample with pigment
3. Printing of cotton fabric sample with reactive dye
4. Printing of silk fabric sample with acid dye
5. Printing of polyester fabric sample with pigment
6. Printing of polyester/cotton blended fabric sample with pigment
7. Printing of cotton fabric sample with discharge style of printing
8. Printing of cotton fabric sample with resist style of printing
9. Printing of silk fabric sample with resist style of printing
10. Determination of washing fastness of dyed cotton fabric sample
11. Determination of color strength and color difference of two dyed fabric samples

References:

1. Technology of printing Vol. IX V. A. Shehnai
2. Technology textile finishing Vol. X V. A. Shehnai
3. Engg. of Textile Colouration C. Duck Worth
4. Textile Finishing W.S.Murphy
5. Printing on Textiles by direct and transfer technique R.W. Lee
6. Electronics Control for Textile Machines Hiren Joshi, Gouri Joshi (NCUTE Pub.)
7. A Glimpse of the Chemical Technology of Textile Fibres R.R. Chakraverty
8. Trouble shooting in wet processing : Acetate, Rayon/Lycocell and Spandex Blends, Dunes

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SUBJECT CODE	CATEGORY	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*	L	T	P	CREDITS
BTTX704	DCS	FABRIC STRUCTURE - II	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 design of compound fabric structures (like Double cloth, backed cloth, velvet structures, terry pile structures and leno structures) and jacquard desi gns as per specifications.
2. To identify and differentiate simple and compound fabric structures accurately.

Course Outcomes (COs)

Student will be able to

1. Make and develop new woven fabric design
2. Make double cloth, backed cloth and velvet structures.
3. Solve technical problems related to compound fabric structures on the loom.
4. Provide suitable draft and pegplan for a given weave & utilise available resources for mak ing designs.

Course Contents:

Unit I : Backed Fabrics

Definition, features, classification, and uses.Figuring with extra warp and extra weft, backed fabrics- warp and weft backed fabrics and reversible backed fabrics

Unit II : Doubled Cloth

Double cloth and its varieties. Different designs etc. Method of preparation of self-stitched and center stitched double cloths.

Unit III: Terry weaves

Definition, classification, process of formation of pile, graphical representation of terry weaves, loop sprouting .Velveteen and corduroy fabrics, real velvet terry and warp pile fabric structure.

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Unit IV: Absorbent fabric

Introduction to gauge and leno structures, methods of producing mock-leno fabric, design, draft & peg-plan of leno structure, Honey comb weaves, huck-a-buck.

Unit V : Jacquard fabric and design

Point paper designing of jacquard fabrics, complex design

References:

1. Advanced textile design - Grosicki Watsons
2. Grammer of textile design – Nisbet.

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Name of Program: B.TECH (Textile Engineering):2018-19

BTTX705

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*				
BTTX705	DCS	SUMMAR TRAINNING: PRESENTATION	0	0	0	60	40	0	0	6	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 practical exposure to the actual working of the industry and to understand the various features of the modern machines

Course Outcomes (COs)

Student will be able to

1. Demonstrate their knowledge in a better way in the actual working condition of the industry
2. Apply their knowledge to solve a problem
3. Show their ability to work as a team

Syllabus

The student will be taken to the various industry in and around regularly along with faculty and lab staff. They will be explained the actual working of the machine, materials, process and its problems, solutions. They will be acquainted with modern development of the machines.

References:

1. Institutional training module for industrial visit.

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Name of Program: B.TECH (Textile Engineering):2018-19

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*				
BTTX706	DCS	MINOR PROJECT	0	0	0	30	20	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. Course will exposed the students to the method of the starting the research work through literature review and analysis of a particular problem.
2. Course will provide the students knowledge about the latest instrument and machinery in the institute lab, various research lab and industry.

Course Outcomes (COs)

Student will be able to

1. Apply the knowledge to study a particular problem
2. Analyse and solve the problem coming during their research work.
3. To create a aptitude for a research work

Course Contents:

Each student will work in the institute lab / outside research / industry institute to study and conduct their research work.

The student perform their project work to a particular project topic under the guidance of the faulty guide allotted to them.

Each student has to give two power point presentations during the semester in front of the faculty members.

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 student are also required to appear in the end sem exam.

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BTTX707 ELECTIVE III

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*				
BTTX717	DCS	TEXTILE MILL PLANNING AND MANAGEMENT	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. Student will be able to identify and evaluate the preliminary requirements for starting of a textile plant and project management
2. Student will be able to demonstrate their conceptual knowledge to the pollution control of a textile mills.
3. Student will be able to investigate the correct reasons of various problems and their solution of a textile plant

Course Outcomes (COs)

Student will be able to

1. Apply their knowledge on the various factors for setting up a Textile plant.
2. Calculate production and use it in balancing of machineries.
3. Solve the reason of various problems and their solution of a textile plant.
4. Use their conceptual knowledge to the pollution control of a textile mills.

Course Contents:

Unit I

Selection of site for textile mills. Textile mill building structures. Principles and requirements of good foundation for machineries. Protection against noise and vibration. Erection of textile machinery. Importance of leveling methods and instruments used for leveling. Idea and comparison of preventive and breakdown maintenance.

Unit II

Spin plans for various counts and yarns. Production rates, waste, efficiency level of spinning machines. Estimation of number of machines for the given production of yarn. Production rates, efficiency etc. of preparatory and weaving shed. Estimation of number of machines in preparatory and weaving.

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Unit III

Plant lay-out and machine lay-out. Labor allocation in different departments of a textile mill. Work study, method study and work measurement. Application of time study in a textile mill. Importance and use of snap study. Concept and application of logistics in a textile mill. House keeping and Material handling equipments.

Unit IV

Air conditioning, humidification and ventilation for a textile mill - different systems of humidification and their efficiency. Temperature, relative humidity and ventilation requirement for different sections of a textile mill.

Unit V

Dust extraction in textile mills - methods and equipments used in dust extraction. Lighting - requirements and fittings, spacing of light fittings, illumination standards and measurements.

References:

1. Air Conditioning in Textile Industry -ATIRA
2. Industrial Engineering & Management -Banga Sharma
3. Textile Manufacturing -M. G. Kulkarni
4. Management of Textile Industry - V.D.Dudeja
5. Modern Preparation and Weaving Machinery - A. Ormerod
6. Humidification and ventilation management in textile industry, Purushottama B, Woodhead
7. Strategic approach for managing a textile, Karshanis A. V., 2009
8. Textile Mills in Changing Environment - M. L. Gulrajani.
9. Modern Technology Management in Textile - Prof. D. B. Ajgaonkar
10. Norms for the Textile Industry - ATIRA, BTRA, SITRA, NITRA
11. Time Study Manual - (For the Textile Industry) Norbert Lloyd Enrick
12. Textile industry effluent - WIRA

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BTTX707 ELECTIVE III

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*				
BTTX727	DCS	GEOTEXTILE TEXTILES	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 geotextile fabrics.
2. To provide knowledge on the technical requirements and the physical and mechanical properties of geotextile fabrics

Course Outcomes (COs)

Student will be able

1. Explain the importance of the geotextiles.
2. Solve the problems occurred during manufacturing of geotextiles.
3. Develop the different structure of geotextiles.
4. Analyze the physical and mechanical behavior of geotextiles.
5. Explain the principle & manufacturing process of geotextiles.

Syllabus

Unit I: Introduction of geotextile Engineering.

Introduction of geotextiles. Usefulness of geotextiles, Understanding soil characteristics, properties affecting engineering behaviour of soil, identification, classifications, permeability, effective stress and pore water pressure, seepage of soils and design of filter criteria.

Unit II: Fiber – Fabric relationships

Geo-synthetics types, functions and application areas of geotextiles, fibres and fabric selection criteria for geotextile applications.

Unit III:

Mechanics of reinforcement, filtration and drainage by geotextiles and functions, material construction and manufacturing processes in case of geotextiles, Evaluation of geotextiles with and without soil, evaluation of filtration and drainage functions, reinforcement, creep, moisture barrier characteristics, durability and ageing.

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Unit IV:
Geotextiles and reinforced soil structures: Retaining walls, embankment, foundation.Geotextiles in roads and railways: separation, draining and filtering.

Unit V:
Geotextiles in environmental control: covers and liners, landslides, and erosion control.

Books Recommended:

1. Geosynthetics in Civil Engineering - R W Sarsby (Editor), Woodhead Textiles Series No. 57, 2006, UK.
2. Fundamentals of Geosynthetic Engineering - ShuklaS K, YinJian-hua, Taylor and Francis, 2006, UK.
3. Geotextiles - Blakie, Chapman and Hall, 1987, New York, USA,
4. Soil Mechanics and Foundation Engineering - Raj P Purushothama, Pearson, 2007, India.
5. Engineering with Geosynthetics - G V Rao and G V S Raju (Editor),, Tata McGraw Hill Publishing Co. Ltd., New Delhi, 1990.

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BTTX707 ELECTIVE III

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*				
BTTX737	DCS	CHEMISTRY OF INTERMEDIATES AND DYESTUFF	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. Describe the various processes of chemical reactions of dye.
2. Recognize difference between natural and synthetic dyes.
3. Classify the dye stuffs and identify the new dyes.

Course Outcomes (COs)

Student will be able to

1. List out the various chemical reactions of aromatic and aliphatic compounds.
2. Test about the chemical reaction for identification of various dyes.
3. Plan the recipe for dyeing the given sample.
4. Illustrate the reactions of dyes.

Course Contents:

Unit I: Benzene intermediates

The Benzene Aromatic system, Sulfonation, Nitration, Halogenations, Alkylation, Introduction of Formyl and Carboxylic groups, Hydroxylation, Reaction with ammonia, Oxidation and Reduction, Heterocylic Intermediates.

Naphthalene Intermediates: Sulfonation, Nitration, Halogenation, Hydroxylation Amination, Naphthalenesulfonic acid, Naphthols, Naphthyl amines, Aminonaphthols, Amino naphthalenesulfonic acid, Aminonaphtholosulfonic acid, 3-Hydroxy-2-naphtholic acid.

Unit II: Anthraquinone Intermediates

Reactivity, Routes to Anthraquinone compounds, Halo anthraquinone, Nitro anthraquinone, anthraquinone sulphonic acids, anthraquinone carbo derivatives, amino anthraquinone, hydroxy anthraquinone, anthraquinone ethers, anthraquinone thiols and thio ethers, Leuco intermediates, Benzanthrones.

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Unit III: Azo Dyes

Mechanism of the diazotisation and the azo coupling reactions, the diazotization reaction, azo coupling reaction, conclusion, Benzidine dyes, Stilbene dyes, after treated dyes, dyes from amino napthol sulfonic acids, dyes from heterocyclic and acyclic intermediates.
Acid Dyes: Neutral dyeing, Milling dyes, chrome dyes, permetallised dyes.
Disperse Dyes: Mono azo dyes, Disazo dyes, water soluble dyes, spirit soluble dyes, food dyes

Unit IV: Anthraquinone Acid Dyes

Sulfonic acid, Di-hydroxy compounds, diamino compounds, amino hydroxy compounds, heterocyclic dyes, Anthrimides and napthocarbazoles, Bromamine acid derivatives.
Disperse dyes: Yellow to orange structure, red structure, violet structure, blue to green structure, fused ring derivatives, water soluble dyes, and commercial product.
Vat Dyes: Carbocyclic dyes, Benzoquinones and naphthoquinones, Acylamino anthroquinones, Benzanthraquinones and pyrenediones, anthrathrones, pyranthrones, dibenzanthrones. Solubilised vat dyes.

Unit V: Phthalocyanine pigments

Structure, properties, synthesis, application, unsubstituted Phthalocyanine, substituted phthalocyanine.Phthalocyanine dyes: Phthalocyanine direct dyes, sulfonic acids, sulfonic acid derivatives, carboxylic acid, amino Phthalocyanine, Phthalocyanine vat dyes, Phthalocyanine sulphur dyes, Phthalocyanine formation in the fiber.

References:

1. Chemistry of Dyes and Principle of Dyeing Vol. II – VA Shennoi
2. Dyes and their Intermediates E.N.Abrahart
3. The Chemistry of Synthetic Dyes and Pigments; H.A. Lubs.
4. Color Chemistry – Zollinger
5. Synthetic Dyes – Dr. Pope Sine
6. Chemical Testing of Textiles (CRC), Fan

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Name of Program: B.TECH (Textile Engineering):2018-19
BTTX708 ELECTIVE IV

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*				
BTTX718	DCS	MERCHANDISING AND EXPORTS MANAGEMENT	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. Student will be able to identify and evaluate the preliminary functions of marketing & merchandising management for textile & apparels. And also they can have the understanding of import export terms used in apparel industry.
2. Student will be able to understand the roles & responsibilities of merchandiser.
3. Student will be able to investigate the real scenario of Indian textile business with export management.

Course Outcomes (COs)

Student will be able

1. Calculate the fabric, processing and apparel costing of their own.
2. Understand the international activity in the field of textile with export management.
3. Understand the sourcing activities needed for merchandiser.
4. Use their conceptual knowledge for analysis the performance of the Indian textile business.

Course Contents:

Unit I: Merchandising in apparel industry

Role of fashion merchandiser, production merchandiser, retail merchandiser, importance of communication skills in merchandising, types of buyers, need for apparel exports. Apparel analysis process.

Unit II: Overview of Clothing Industry

Trends in the global textile& apparel industry, recent advancements in garment manufacturing technology, current challenges in textile industry, sustainable supply chain & it's importance.

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Unit III: Export Procedure Documentation

Need of export documentation, Types of export documents-commercial & regulatory, terms of payment - letter of credit, documents against acceptance, documents against payment, Inco terms like free on board, cost insurance freight. Shipment modes – types of load, types of containers. Export finance, pre-shipment inspection agencies. Internal documents of merchandiser

Unit IV: Apparel Costing For Merchandiser

Elements of cost-direct & indirect, Factors influencing costing process, process cost calculation, examples to calculate different process cost like fabric cost, processing cost, garmenting cost etc.

Unit V: Sourcing For Merchandiser

Definition of sourcing, sourcing process in apparel industry, different type of vendors, sourcing strategies for decision making, sourcing destinations in India and world, role of merchandiser in sourcing, factors affecting sourcing process. Vendor management - criteria for vendor selection, vendor evaluation, different supplier types in apparel industry.

References:

1. Principles of marketing - Philip Kotler
2. Apparel Merchandising by R.Rathinamoorthy & R.Surjit,Woodhead Publishing I.Ltd.
3. The global textile & clothing industry-Technological Advances & Future Challenges by R.Shishoo , Woodhead Publishing I.Ltd.
4. Textiled and apparel in the international economy - K.G. Dickerson
5. Fashion Marketing, Mike Easey
6. Fashion Merchandising, Alaine Stone, Jean and samples.
7. Fashion from concept to consumer by Gini frings,Prentice Hall publication

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BTTX708 ELECTIVE IV

SUBJECT CODE	CATEGORY	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*	L	T	P	CREDITS
BTTX728	DCS	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 of development of yarns structure.
2. Course will provide the theoretical knowledge of tensile behaviour, configuration of fiber in the yarn structure.
3. Course will provide various theoretical model for predicting the behaviour of the yarn and fabric

Course Outcomes (COs)

Student will be able to

1. Identify, analyse and solve the complex textile engineering problems in the yarn
2. Demonstrate their skill in the R and D work of textile product.
3. Remember the mathematical relationship in formulating the various properties.

Course Contents:

Unit I:

Yarn diameter and count, density, specific volume, Yarn count and twist Factor, Twist Angle and helix angle, twist contraction and retraction packing of fibers and packing fraction, close packing and open packing of fibres, optimum level of twist. Solving of various related numerical problems.

Unit II

Effect of twist on yarn strength, Stress-stain curve, Young's modulus, tenacity, RKM etc. Ideal yarn geometry - assumptions, various relationship and related calculation, mechanics of yarn structure, tensile behavior of staple yarn and tensile behavior of continuous filament yarn, low strain and large stain model. Solving of various related numerical problems.

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Unit III

Migration of fibre, ideal migration, factors controlling and effect of migration in yarn structure, Morton's view of fiber migration in yarn. Qualitative and quantitative approaches to migration. Various models, examples and solutions.

Unit IV

Woven cloth setting theories, elements of woven fabric geometry- ends and picks, count, cover factor, crimp and weight. Cover factor and its relationship with fabric weight. Solving of various related numerical problems.

Unit V

Pierce's simple geometry of plain weave, derivation of basic equations, practical application of cloth geometry, crimp interchange, fabric assistance. Drape of fabric and drape coefficient.

References:

1. Pierce paper on fabric geometry
2. Textile yarn- Grosberg
3. Textile yarn- Technology, Structure and Application – B.C. Goswami, Martindale, Scardino
4. Structural Mechanics of Fibers , Yarns & Fabrics - Hearl , Grosberg & Backer
5. Textile Manufacturing – M.G. Kulkarni

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BTTX708 ELECTIVE IV

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*				
BTTX738	DCS	COLOUR PHYSICS AND COMPUTER COLOUR MATCHING	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. Describe various elements of colour physics.
2. Recognize the various colours used in textile industry.
3. Compare the various colours present in dye.

Course Outcomes (COs)

Student will be able

1. Prepare project report for given dye recipe.
2. Reproduce dye to match the colour of given sample.
3. Show and tell the accept or percept of given sample.
4. Simulate the colours in different dyes.

Course Contents:

Unit I

Fundamentals of color science, what is colour, perception of color, color mixing laws, confusion in color perception, meta-merism.

Unit II

Color order system: Munsell system, color atlas system, CIE system, CIE tri-stimulus values, chromaticity co-ordinates , transform of the CIE system, Equation index for color spaces, whiteness assessment, yellowness index.

Unit III

Optical theory for color matching: Reflectance curves of dyed specimens, Kubelka – Munk theory, application of K-M theory to textiles, Developments after K-M theory.

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Unit IV

Color measuring instruments: Principles of color measuring instruments, optical sensors signal processor, features of the available color instruments, selection of instrument and its utilization.

Unit V

Color difference Pass/fail system and shade sorting: Color difference and chromaticity diagram, color difference equation, CIE color difference equations, Acceptability and perceptibility, modified color difference equations based on ABLAB. Pass/fail system, setting up tolerance limit.

References:

1. Instrumental Color Measurements & CA Color Matching for Textiles; H.S. Shah & .S. Gandhi
2. Color Physics for Industry – Roderick Mcdonald.
3. Computer Color Analysis – A.D. Sule
4. Color for Textiles – A user handbook – Wilfred Ingamells
5. Modern Concepts of Color and Appearance – Asim Kr. Roy Choudhary
6. The Theory of Coloration of Textiles – 2nd Edition – A. Johnson
7. Color Technology in the Textile Industry, 2nd Ed. Cairman, AATCC s

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