

**Syllabus for Multi-Disciplinary Minor
(MDM)**

In

**B. Tech (Fibres and Textile Processing
Technology) (2023-2024)
(Under the New Education Policy (NEP 2020))**



Offered by

**DEPARTMENT OF FIBRES AND TEXTILE
PROCESSING TECHNOLOGY**

INSTITUTE OF CHEMICAL TECHNOLOGY

(University Under Section-3 of UGC Act, 1956)

Elite Status and Center for Excellence

Government of Maharashtra

Nathalal Parekh Marg, Matunga, Mumbai 400 019

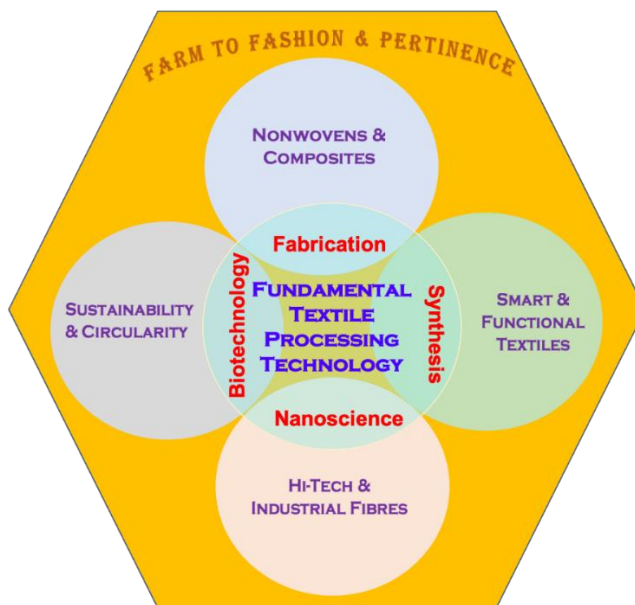
(INDIA)

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A. Preamble:

The Institute of Chemical Technology (ICT) was established in 1933 and was earlier known as the University Department of Chemical Technology (UDCT). Inaugurated by then Chairman of the Textile Mill Owner's Association, with an objective to provide Education and develop Capabilities in the area of Textile Processing and to fulfil the needs of the blooming Textile Industry in India.

Initially, it offered two courses: one in Textile Chemistry and the other in Chemical Engineering. The Textiles department is now completing the glorious journey of 88 years. This is the first and only premium institute specifically dedicated to study various aspects of Textile wet processing and conduct in-depth research to provide feasible techno-commercial solutions to ever-evolving industrial needs.



The department is closely working with various industries involved in fibre and yarn manufacturing, fabric processing and garment making, colourant and auxiliary chemical producing, instrument and equipment making, fashion designing and branding. It also has strong linkage and signed Memorandum of Understanding (MOU) with many national and international renowned universities.

It is well known for the translational research and technology transfer and is often cited as a role model for academic institutes.

The department has the unique distinction of being the first discipline with which this academic institute started and has the highest student intake capacity among the technology courses within the institute. The course involves study of chemistry and manufacture of fibres, their chemical processing such as bleaching, dyeing, printing and finishing. It further encompasses the study of chemistry as well as application of various kinds of chemicals, dyes, thickeners, and finishing auxiliaries which are used in chemical processing of apparel, home furnishing and technical textiles. It also involves knowledge of green chemistry, biotechnology and nanotechnology with special reference to chemical processing of textiles.

B. Programme Outcomes:

Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and knowledge in specialized field of Fibres and Textile Processing Technology to the solution of complex Textile and apparel industrial problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex Textile and Apparel chemical technological problems reaching substantiated conclusions using first principles of mathematics, natural sciences, engineering sciences including Fibres and Textile Processing technology.
3. **Design/development of solutions:** Design solutions for complex Fibres and Textile Processing technology related problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions which can be used for constructing solutions to the problems.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex Fibres and Textile Processing technology related activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the Fibres and Textile Processing technology practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions with respect to Fibres and Textile Processing technology, in societal and environmental contexts, and demonstrate the

knowledge of, and need for sustainable development.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex technological activities with reference to Fibres and Textile Processing Technology, with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

1. Develop a **confident graduate** who can offer **solutions to the shop floor complex problems** in **fibre to garment** textile processing field.
2. Instil fundamental knowledge and motivation to **go for advance studies and research** so that they could develop themselves into **Academician and Research scientists** making positive contribution to **generation and dissemination** of new **knowledge**.
3. Introduce **the diverse industry** and emerging **Textile Technologies** to create a **thirst** among the **students** for **innovative start- up** or career options taking advantage of the fast developing Indian economy.

C. Intake: 34

D. Eligibility criteria: HSC/12th Science

E. Structure of the Multidisciplinary Minor Courses:

| Multidisciplinary Minors: Fibres and Textile Processing Technology | | | | | | | | | | |
|---|--------------------|---|----------------|------------------|----------|-----------|--------------------------------|-----------|-----------|--------------|
| Course | Course Code | Subject | Credits | Hrs./Week | | | Marks for various Exams | | | |
| | | | | L | T | P | CA | MS | ES | Total |
| MDM-I | TXT1107 | Introduction to Textile Substrates | 2 | 1 | 1 | 0 | 20 | 30 | 50 | 100 |
| MDM-II | TXT1218 | Introduction to Textile Wet Processing | 2 | 1 | 1 | 0 | 20 | 30 | 50 | 100 |
| MDM-III | TXP1022 | Textile Wet Processing Lab 1 (pretreatment, dyeing, printing) | 4 | 0 | 0 | 8 | 0 | 50 | 50 | 100 |
| MDM-IV | TXT1216 | Chemistry and application of speciality chemicals | 2 | 1 | 1 | 0 | 20 | 30 | 50 | 100 |
| MDM-V | TXT1301 | Testing of textile materials | 2 | 1 | 1 | 0 | 20 | 30 | 50 | 100 |
| MDM-VI | TXP1023 | Textile Wet Processing Lab 2 (finishing, testing) | 2 | 0 | 0 | 4 | 00 | 50 | 50 | 100 |
| | | TOTAL | 14 | 4 | 4 | 12 | | | | 600 |

F. Detailed syllabus:

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|---|---|--------------------|----------|------------------|
| Course Code: TXT1107 | Course Title: MDM-I Introduction to Textile Substrates | Credits = 2 | | |
| | | L | T | P |
| Semester: III | Total contact hours: 30 | 1 | 1 | 0 |
| Course Outcomes (students will be able to.....) | | | | |
| 1 | Understand fibre-forming properties with different textile terms and their classification (K2). | | | |
| 2 | Acquire deeper understanding and insights into basic chemistry, production processes and physical and chemical properties of Natural and Synthetic fibers. (K2). | | | |
| 3 | Calculate yarn and fabric production related numerical. (K3) | | | |
| 4 | Analyze designs of various type of fabrics and different types of defects in fabric. (K4) | | | |
| List of Prerequisite Courses | | | | |
| H. S. C. Science | | | | |
| List of Courses where this course will be prerequisite | | | | |
| Technology of Textile Dyeing, Testing of Textile Materials, Technology of Fibres and Polymers, Manufacturing of Yarn and Fabric | | | | |
| Description of relevance of this course in the B.Tech. Program | | | | |
| Students will have a better understanding of different natural and synthetic fibres, their properties, as well as an important concept of polymer chemistry, which will help in manufacturing as well as designing processing parameters. | | | | |
| Description of relevance of this course in the B.Tech. Program | | | | |
| Students will have a better understanding of different natural and synthetic fibres, their properties, as well as an important concept of polymer chemistry, which will help in manufacturing as well as designing processing parameters. | | | | |
| Description of relevance of this course in the B.Tech. Program | | | | |
| Students will have a better understanding of different natural and synthetic fibres, their properties, as well as an important concept of polymer chemistry, which will help in manufacturing as well as designing processing parameters. | | | | |
| Sr. no. | Course Contents (Topics and subtopics) | | | Reqd. hrs |
| 1. | Introduction to textile fibre as polymer, Fibre forming characteristics of polymers, Definition of various basic textile terms, Introduction to Fibre, Yarn, Fabric, Classification of fibres based on sources of origin and on chemical constitution. | | | 4 |
| 2. | Natural fibres of plant, animal and mineral origin, chemistry, morphology, physical and chemical properties, structure property relationship with application, commercially important fibres like cotton, jute, linen, bamboo, wool, silk etc., Fibre to fabric conversion steps. | | | 7 |
| 3. | Semi-synthetic fibres such as viscose rayon, cuprammonium rayon, acetate rayon, bamboo rayon and lyocell with respect to chemistry, manufacturing process, morphology, physical and chemical properties and structure property relationship with applications. | | | 5 |

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| 4. | Synthetic fibres such as polyester and its variants, polyamides, acrylic, polypropylene, etc with respect to their raw materials, synthesis, manufacturing processes including LOY, FOY, POY, FDY, draw ratio, physical and chemical properties and applications. | 5 |
| 5. | Manufacturing of yarn: Introduction of spinning, Primary properties of textile fibres, Physical properties of Cotton, Silk, Wool. Fineness measurement of Filament and Yarn. Process comparison of staple spinning and filament spinning. | 3 |
| 6. | Manufacturing of Fabric: Introduction to fabric manufacturing, types of manufacturing, weaving, knitting and non-woven. | 3 |
| 7. | Numerical – Fineness, Moisture percentage, Motion transfer in gears and rollers, Drafting and doubling, Twist, Fabric production, Cover factor, statistical analysis. | 3 |

List of Text Books/ Reference Books

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|----|---|
| 1. | Textile Fibres, Shenai V.A., Vol-1, Sevak Publications, Bombay, 3rd edition, 1991. |
| 2. | Mishra, S. P. A Text Book of Fibre Science and Technology. India: New Age International, |
| 3. | Ghosh, P. . Fibre Science and Technology. United States: McGraw Hill Education (India) Private Limited, 2004 |
| 4. | Kothari, V. Manufactured Fibre Technology. Netherlands: Springer Netherland, 2012 |
| 5. | Visco-Elastic Properties of Polymers, Ferry, J.D., John Wiley and Sons, New York, 3 rd edition, |
| 6. | Polymer Science, V R Gowariker, New Age international (P) Ltd Publications, New Delhi,1986 |
| 7. | Weaving: Machines, mechanisms, management, Talukdar, M.K., Sriramulu P.K., Ajgaonkar D.B Mahajan Publishers Private Ltd., Ahmedabad, 1998 |
| 8. | Knitting technology, D. B. Ajgaonkar, Universal Pub, 1998 |
| 9. | Nonwovens - Process, Structure, Properties and Applications; T Karthik, 2017 |

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|--|---|--------------------|----------|------------------|
| Course Code: TXT1218 | Course Title: MDM-II Introduction to Textile Wet Processing | Credits = 2 | | |
| | | L | T | P |
| Semester: IV | Total contact hours: 30 | 1 | 1 | 0 |
| Course Outcomes (students will be able to.....) | | | | |
| 1 | Explain the need for sizing yarns and desizing of fabric; effect of scouring and bleaching agent on fabric pretreatment, mercerization of yarn and fabric. (K2) | | | |
| 2 | Applying various dyes on textile coloration and understanding the importance of various textile processing parameters for quality dyeing. (K3) | | | |
| 3 | Comprehend fundamental knowledge thickener selection for printing and stages of printing. (K3) | | | |
| 4 | Select between different types of softeners, fastness-improving agents, antimicrobial, antistatic, flame retardant, their chemistry, application on fabric and evaluation tests. (K4) | | | |
| List of Prerequisite Courses | | | | |
| H. S. C. Science | | | | |
| List of Courses where this course will be prerequisite | | | | |
| Technology of Textile Dyeing, Technology of Textile Printing, Technology of Textile Pretreatment, Technology of Finishing | | | | |
| Description of relevance of this course in the B.Tech. Program | | | | |
| Students will have better understanding of various stages of textile wet processing and the gain a basic idea about the wet processing operations. | | | | |
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| Students will have better understanding of various stages of textile wet processing and the gain a basic idea about the wet processing operations. | | | | |
| Sr. No. | Course Contents (Topics and subtopics) | | | Reqd. hrs |
| 1. | Pretreatment: Basic operations in textile wet processing – overall sequence, an overview of textile types and chemicals used, Singeing, Desizing, Scouring and Bleaching, Mercerization, Pretreatment of Blends. | | | 5 |
| 2. | Dyeing: Parameters of quality dyeing, Classification of dyes based on application, Performance characteristics of dyed textiles. Machinery for dyeing of textiles in various forms such as fibres, yarns, woven and knitted fabric. | | | 10 |
| 3. | Printing: Introduction to various colouration technics, Stages in the printing of textiles, and History of textile printing. Preparation of print paste, functions of various ingredients of print paste, classification of thickeners, Preparation of stock thickening, Selection of thickening agents based on dye class, style and method, Styles of Printing and various special styles of printing | | | 10 |

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| 4. | Finishing of Textile: Objective of textile Finishing and type of finishing techniques, Mechanical finishes like Calendaring, sanforising. Chemical finishing – conventional softeners, stiffeners, binders, weighting agents, silicone finishes, speciality finishes. | 5 |
| List of Text Books/ Reference Books | | |
| 1. | Chemical Technology in the Pre-treatment Processes of Textiles by S.R.Karmakar, 1999 | |
| 2. | Technology of Bleaching and Mercerizing, Shenai V.A., Sevak Publication, Bombay, Vol.3, 3rd edition, 2003. | |
| 3. | Technology of Dyeing, Shenai V.A., Vol. 6, Sevak Publication, Bombay, 1994. | |
| 4. | Technology of Printing, V. A. Shenai, Sevak Publications, Bombay, Vol. 4, 1990. | |
| 5. | Textile Printing by L. W. C. Miles, revised second edition published by SDC, 2003. | |
| 6. | Technology of Finishing, Shenai V.A., Vol. 10, Sevak Publication, Bombay, 1990. | |

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| Course Code: TXP1022 | Course Title: MDM-III Textile wet processing lab 1 (Pretreatment, Dyeing, Printing) | Credits = 4 | | |
| | | L | T | P |
| Semester: V | Total contact hours: 60 | 0 | 0 | 8 |
| Course Outcomes (students will be able to.....) | | | | |
| 1 | Perform desizing, scouring and bleaching of cotton along with its evaluation. (K3) | | | |
| 2 | Demonstrate colouration of natural and synthetic fibres using a different class of dyes. (K3) | | | |
| 3 | Achieve different printing effects by varying fibres, application methods and machinery (K4). | | | |
| 4 | Evaluate the performance effect of different classes of dyes on fibres (K4). | | | |
| List of Prerequisite Courses | | | | |
| Introduction to Textile Wet Processing, Introduction to Textile Substrates | | | | |
| List of Courses where this course will be prerequisite | | | | |
| Technology of Textile Pretreatment, Technology of Textile Dyeing and Technology of Textile Printing | | | | |
| Description of relevance of this course in the MSc (Textile Chemistry) Program | | | | |
| The practical will enable students to perform dyeing and printing on different textile substrates using various classes of dyes by different methods of application. | | | | |
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| Description of relevance of this course in the MSc (Textile Chemistry) Program | | | | |
| The practical will enable students to perform dyeing and printing on different textile substrates using various classes of dyes by different methods of application. | | | | |
| Sr.No. | Course Contents (Topics and subtopics) | | | Reqd. hrs |
| 1. | Desizing cotton-acid desizing, enzyme desizing, oxidative desizing of cotton and Evaluation of desizing efficiency-staining with iodine, loss in weight and estimation of residual starch | | | 4 |
| 2. | Scouring of cotton-open boil, pressure boil, pad-steam process and Evaluation of scouring efficiency-wetting time, sinking time, loss in weight | | | 4 |
| 3. | Bleaching of Cotton by bleaching powder, hydrogen peroxide and Evaluation of bleaching efficiency -whiteness index and % reflectance | | | 4 |
| 4. | To study dyeing of cotton and Viscose with Direct and Reactive dyes | | | 4 |
| 5. | To study dyeing of cotton with Vat and Sulphur dyes | | | 4 |
| 6. | To study dyeing of cotton with azoic colors | | | 4 |
| 7. | To study dyeing of Wool and silk with Acid dyes | | | 4 |
| 8. | To study dyeing of Polyester with Disperse dyes | | | 4 |
| 9. | Direct style of printing of Direct and Reactive Dyes on cotton | | | 4 |
| 10. | Direct style of printing of Vat Dyes and cotton | | | 4 |
| 11. | Direct style printing on Wool and Silk with Acid dyes | | | 4 |
| 12. | Direct style printing on Polyester and Nylon with Disperse dyes | | | 4 |
| 13. | Discharge style of printing – white discharge under Reactive dyed ground | | | 4 |
| 14. | Resist style of printing – White resist under reactive dyed ground | | | 4 |
| 15. | Special print effect – Batik and Tie & Dye style of printing | | | 4 |
| List of Text Books/ Reference Books | | | | |
| Gile's Laboratory Course in Dyeing, D G Duff and R S Sinclair, SDC Publ. | | | | |

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| Course Code: TXT1216 | Course Title: MDM IV Chemistry & Applications of Specialty Chemicals | | Credits = 2 | | |
| | | | L | T | P |
| Semester: VI | Total contact hours: 30 | | 1 | 1 | 0 |
| Course Outcomes (students will be able to.....) | | | | | |
| 1. | Evaluate surfactants and identify their ionic nature. (K3) | | | | |
| 2. | Explain the biodegradability of surfactants and eco-friendly textile auxiliaries. (K2) | | | | |
| 3. | Understand the fundamentals of textile auxiliaries. (K1) | | | | |
| 4. | Classify different types of surfactant and their role in textile (K4) | | | | |
| List of Prerequisite Courses | | | | | |
| Introduction to Textile Wet Processing, Introduction to Textile Substrates | | | | | |
| List of Courses where this course will be prerequisite | | | | | |
| Testing of Textile Materials | | | | | |
| Description of relevance of this course in the B.Tech. Program | | | | | |
| The course will provide student deep understanding about the role of different functional groups on the properties of various specialty chemicals used in different industries. | | | | | |
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| Sr.No. | Course contents (topics/subtopics) | | | | Reqd Hrs |
| 1 | Nomenclature, functions and classification of textile auxiliaries | | | | 2 |
| 2 | Surface activity phenomenon, Surfactants and their chemistry and applications. | | | | 2 |
| 3 | Anionic Surfactants: Properties and uses of anionics from carboxylic acids, alkylaryl sulphonates, alkyl sulphates, alkane sulphonates and phosphate esters, etc. | | | | 3 |
| 4 | Cationic Surfactants: Chemistry, Properties and applications | | | | 2 |
| 5 | Nonionic Surfactants: Chemistry, Properties and applications | | | | 2 |
| 6 | Processing Aids: The structure-property relationships of Antimigrants, Defoamers, Dyeing Assistants, Enzymes in Preparation, Lubricants, Peroxide Stabilizers, Printing Binders, Surfactants (Scouring and Wetting Agents), Thickeners Warp Sizes | | | | 5 |
| 7 | Performance Enhancers: The structure-property relationships of Antimicrobial Finishes, Antipilling Agents, Antistatic Agents, Durable Press Agents, Dye Fixatives, Elastomeric Finishes, Enzymes in Finishing, Flame Retardants, Hand Modifiers (Softeners and Hand Builders), Repellent Finishes, Soil Release Agents, Stain blockers and Ultraviolet Absorbers | | | | 5 |
| 8 | Qualitative and quantitative evaluation of auxiliaries; Testing of surfactants, detergency, identification of ionic nature. | | | | 3 |
| 9 | Biodegradability of surfactants | | | | 2 |

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| 10 | Banned chemicals in pre-treatments, Natural textile auxiliaries | 2 |
| 11 | Recent developments in textile auxiliaries | 2 |
| List of Text Books/ Reference Books | | |
| 1 | Textile Chemicals and Auxiliaries, Speel H.C., Reinhold Processing Corporation, New York, 1952 | |
| 2 | Textile Auxiliaries, Batty, J.W., Dergamon Press, Oxford, 1967. | |
| 3 | Colourants and Auxiliaries: Organic Chemistry and Application Properties, Shore, J., SDC, Bradford, 1990. | |
| 4 | Laundry Detergents, Smulders, E., Wiley VCH, Weinheim, 2002. | |
| 5 | Chemistry and Textile Auxiliaries, Shenai V.A., Vol. 65, Sevak Publication, Bombay, 2nd edition, 2002. | |
| 6 | Textile finishing, D. Heywood, ed., Society of Dyers and Colourists, Bradford, England, 2003 | |
| 7 | Chemical finishing of textiles, W.D. Schindler and P.J. Hauser, Woodhead Publishing, Cambridge, England, 2004 | |

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|--|--|--------------------|----------|------------------|
| Course Code: TXT1301 | Course Title: MDM V Testing of Textile Materials | Credits = 2 | | |
| | | L | T | P |
| Semester: VII | Total contact hours: 30 | 1 | 1 | 0 |
| Course Outcomes (students will be able to.....) | | | | |
| 1 | Comprehend the objects of testing and its reasons and stages at which testing is to be done | | | |
| 2 | Analyze different physical testing performed on the fibres, yarn, and fabric for their mechanical, aesthetic and performance behaviour. (K3) | | | |
| 3 | Interpret and examine different fastness tests of the coloured goods (K4) | | | |
| 4 | Identify different testing standards and their importance (K3) | | | |
| List of Prerequisite Courses | | | | |
| Introduction to Textile Wet Processing, Introduction to Textile Substrates | | | | |
| List of Courses where this course will be prerequisite | | | | |
| Technology of Garment Manufacturing and Merchandising | | | | |
| Description of relevance of this course in the B.Tech. Program | | | | |
| This course will help students to understand and apply different analytical methods for testing textile, measurement of colour fastness and assessment of performance properties of textile. | | | | |
| Sr. No. | Course contents (topics/subtopics) | | | Reqd. hrs |
| 1. | Objects of testing; Introduction to textile testing, Selection of samples for testing, Random and biased samples, Testing equipment and their use; Analysis of results, Quality, statistical analysis of results, t-test | | | 4 |
| 2. | Analytical (Advanced) equipment's and their role in Textile analysis, Identification, and testing of fibres by different methods like density, burning behavior, stain test, melting point, dissolution test etc. | | | 4 |
| 3. | Various testing standards such as BIS, AATCC, ISO along with their format for measurement and reporting of colour fastness to various agencies, standard depth of shade | | | 8 |
| 4. | Tensile testing of fibres, yarns and fabrics. Tearing, Bursting, Pilling and Abrasion resistance tests for fabrics. Bending, shear and compressional properties of fabrics. Fabric drape and handle. Crease and wrinkle behavior. Air, water and water-vapour transmission through fabrics. Thermal resistance of fabrics. Testing of interlaced and textured yarns. | | | 8 |
| 5. | Flame retardancy, antimicrobial, hydrophilic and hydrophobic testing of fabrics along with special tests for carpets. | | | 4 |

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| 6. | Care labelling, Testing of lycra blended fabric material | 2 |
| List of Text Books/ Reference Books | | |
| 1. | Textile Analysis, Trotman E.R., Trotman S.R., Charles Griffin and Co., London, 1932. | |
| 2. | Principles of Textile Testing : An introduction to Physical methods and Testing textile fibres, yarn and fabric, Booth J.E., Heywood Books, London, 3rd edition, 1968. | |
| 3. | Microscopic and Chemical Testing of Textiles, Koch, P.H., Chapman and Hall, London, 1963 | |
| 4. | Physical Properties of Textile Fibres, Morton, W.E. and Hearle, J.W.S., Textile Institute, Manchester, 2nd edition, 1975. | |
| 5. | Society of Dyers and Colourists : standard methods for the determination of the colour fastness of Textiles and Leather.1980 | |
| 6. | Handbook of Textile Testing and Quality Control, Grover, B. and Hemby, P.S., Wiley Eastern Ltd., New Delhi, 2nd edition, 1988. | |
| 7. | Textile Testing and Analysis, Collier, B.J. and Hellen H., Upper Saddle River: Pentice Hall Inc., 1999. | |
| 8. | Principles of Textile Testing, 3e (PB) India: CBS Publishers and Distributors, 1996 | |
| 9. | Saville, B. P. Physical Testing of Textiles. United Kingdom: Elsevier Science, 1999 | |
| 10. | Raul, J. Textile Testing. India: APH Publishing Corporation, 2005 | |
| 11. | Izquierdo, V., Vermeersch, O., Dolez, P. I. Advanced Characterization and Testing of Textiles. United Kingdom: Elsevier Science, 2017 | |

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|--|--|--|--|--|--------------------|--------------------|----------|--|
| Course Code: TXP1023 | | Course Title: MDM VI Textile wet processing lab 2 (Finishing and Testing) | | | Credits = 2 | | | |
| Semester: VIII | | | | | L | T | P | |
| | | Total contact hours: 60 | | | 0 | 0 | 4 | |
| Course Outcomes (students will be able to.....) | | | | | | | | |
| 1 | Apply crosslinking, flame retarding agent, and softener on cotton fabric along with its evaluation. (K4) | | | | | | | |
| 2 | Apply water & oil-repellent agents on the cotton fabric along with its evaluation. (K4) | | | | | | | |
| 3 | Apply optical brightener on cotton & polyester fabric along with its evaluation. (K4) | | | | | | | |
| 4 | Measure tensile, tearing, and bursting strength, & % elongation of cotton & polyester fabric and/ yarn. (K3) | | | | | | | |
| List of Prerequisite Courses | | | | | | | | |
| Introduction to Textile Substrates, Introduction to Textile Wet Processing | | | | | | | | |
| List of Courses where this course will be prerequisite | | | | | | | | |
| Technology of Finishing | | | | | | | | |
| Description of relevance of this course in the B.Tech. Program | | | | | | | | |
| This will help students to understand the properties and applications of textile substrate used in different end-uses. | | | | | | | | |
| Sr. no. | | | | | | | | |
| Course Contents (Topics and subtopics) | | | | | | Reqd. hours | | |
| 1. | Application of cross linking agent on cotton fabric and testing of finished fabric for crease recovery angle, tensile and tear strength. | | | | | | 8 | |
| 2. | Application of flame retarding agent on cotton fabric and testing of finished fabric by measurement of char length, rate of burning and Limiting Oxygen Index | | | | | | 8 | |
| 3. | Application of softeners on cotton fabric and testing of finished fabric for its feel, drapability, effect on absorbency, yellowing, shade change, sewability testing, Handlometer /surface friction assessment. | | | | | | 8 | |
| 4. | Application of water repellent/waterproof agent on cotton fabric and evaluation of fabric for water repellency by spray/shower test and water penetration test. | | | | | | 8 | |
| 5. | Application of Optical brightening agent on cotton & Polyester fabric and evaluation of fabric for its whiteness. | | | | | | 4 | |
| 6. | Application of stiffening agent and evaluation of fabric for its feel and bending length | | | | | | 4 | |
| 7. | To measure the Tensile strength and % elongation of cotton & polyester yarn and fabric | | | | | | 4 | |
| 8. | To measure the Tearing and bursting strength of cotton & polyester fabric | | | | | | 4 | |
| 9. | To measure the % crimp of texturized yarn and fabric, , | | | | | | 4 | |
| 10. | To measure the GSM, drapability and bending length of finished fabrics | | | | | | 4 | |
| 11. | To measure the count and denier of the yarn | | | | | | 4 | |