

12 August 2010

**Semester wise pattern of the M.Tech.-Textile Processing Course**

**SEMESTER - I**

<b>Sr. No.</b>		<b>Course Code</b>	<b>Course Title</b>	<b>Hours/ week (L+T)</b>	<b>Marks</b>	<b>Credits</b>
1	Core I	<b>TXT 2501</b>	Technical Textiles	<b>2+1</b>	<b>50</b>	<b>3</b>
2	Core II	<b>TXT 2101</b>	Modification of Fibrous Polymers	<b>2+1</b>	<b>50</b>	<b>3</b>
3	Core III	<b>PYT 2106</b>	Physical Methods of Analysis	<b>2+1</b>	<b>50</b>	<b>3</b>
4	Elective I	<b>TXT 2205</b>	Continuous Processing of Textile	<b>2+1</b>	<b>50</b>	<b>3</b>
5	Elective II		Intellectual Property Rights	2+1	50	3
6	Project I	<b>TXP 2001</b>	Critical Review of One Research Publication	<b>2+1</b>	<b>50</b>	<b>3</b>
7	Project II	<b>TXP 2002</b>	Seminar	<b>2+1</b>	<b>50</b>	<b>3</b>

**SEMESTER - II**

<b>Sr. No.</b>		<b>Course Code</b>	<b>Course Title</b>	<b>Hours/ week (L+T)</b>	<b>Marks</b>	<b>Credits</b>
1	Core IV	<b>TXT 2201</b>	Advanced Textile Chemistry	<b>2+1</b>	<b>50</b>	<b>3</b>
2	Core V	<b>TXT 2801</b>	Energy and Water conservation in processing industries	<b>2+1</b>	<b>50</b>	<b>3</b>
3	Core VI	<b>TXT 2301</b>	Evaluation of Textiles, Dyes and Auxiliaries	<b>2+1</b>	<b>50</b>	<b>3</b>
4	Core VII	<b>TXT 2802</b>	Environmental Problems in Textile Processing	<b>2+1</b>	<b>50</b>	<b>3</b>
5	Elective III	<b>TXT 2203</b>	Developments in Textile Processing Machinery	<b>2+1</b>	<b>50</b>	<b>3</b>
6	Elective IV	<b>TXT 2601</b>	Biotechnology in Textiles	2+1	50	3
7	Project III	<b>TXP 2003</b>	Literature review on the proposed research topic	<b>2+1</b>	<b>50</b>	<b>3</b>

**SEMESTER - III**

<b>Sr. No.</b>		<b>Course Code</b>	<b>Course Title</b>	<b>No of Weeks</b>	<b>Marks</b>	<b>Credits</b>
1	Project IV	<b>TXP 2004</b>	Mid Project Evaluation	<b>15</b>	<b>350</b>	<b>14</b>

**SEMESTER - IV**

<b>Sr. No.</b>		<b>Course Code</b>	<b>Course Title</b>	<b>No of Weeks</b>	<b>Marks</b>	<b>Credits</b>
1	Project V	<b>TXP 2005</b>	Final Project Evaluation	<b>15</b>	<b>350</b>	<b>14</b>

<b>Semesters III and IV</b>
-----------------------------

Project evaluation of 350 (equivalent to <b>14 credits</b> ) marks in each semester ( <b>Total 28 credits</b> )
---

*\*Electives offered from our own or any other department*

Note: Department will offer the subject provided more than 5 students are opting the course.

Elective I & III: No restriction on students if the students from other Department are willing to take this course.

**List of Electives offered by dept for Semester I (Elective II)**

1. TXT 2901: Organization and Management in Textile Industry
2. TXT 2202: Advances in Physical Chemistry of Coloration
3. TXT 2205: Continuous Processing of Textile

**List of Electives offered by dept for Semester II (Elective IV)**

1. TXT 2401: Garment Technology
2. TXT 2204: Developments in Textile Auxiliary Chemicals
3. TXT 2203: Developments in Textile Processing Machinery
4. TXT 2601: Biotechnology in Textiles

**Syllabus for the M. Tech. (Textile Processing) Two Year (4 Semesters) Course**

**Semester I**

<b>Code &amp; Title of the Course</b>	<b>TXT 2501</b> Technical Textiles
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	I

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Definition & Classification of Technical Textiles	2
2.	Economics, Growth Potential, Selection Criteria for the fibres to be used in individual fields.	5
3.	Application & Growth of individual segment like fibres geo textiles, medical textiles, automotive textiles, etc, Detailed description of some products of each	13

4.	Hi-Tech fibres & its application	5
5.	Recent advances in the field of technical textiles	5

**Reference books:**

1. Hand book of technical textiles, A.R. Horrock and S.C. Anand
2. Coated textiles Principles and applications by Dr. A.K. Sen
3. Medical textiles '96 by Subhash Anand
4. Automotive textiles by Dr. S.K. Mukhopadhyay and J.F. partridge, The Textile Institute.
5. Wellington sear's hand book of Industrial textiles by Dr. Sabit Adanur High Performance Fibers, J.W.S. Hearle, Wood head Publishing
5. New millennium fiber ,T hongu,crc press,2005
6. Medical Textiles & biomaterial for healthcare,Anand S.C. Wood head publishing,2006
7. Kirk-othmer encyclopedia
8. Isotopes & radiation technology in industry,Rao S.M.
9. Natural & man-made Textile fibres,G.E Linton, New York duell,sloan and pearce 1966
10. Advanced fiber spinning Technology,T.Nakajima,Wood head publication,2002
11. Bicomponent fires. ,Jeffries,Merrow publishing,1996
12. New millennium fiber ,T hongu,crc press,2005

<b>Code &amp; Title of the Course</b>	<b>TXT 2101</b> Modification of Fibrous Polymers
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1+
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	I

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Introduction of new functional groups in fibres	3
2.	Surface and overall Chemical and Physical modification of fibres	5
3.	Grafting of different polymers on fibres and properties of grafted co-polymers	5
4.	Reaction of various chemicals and radiations which alter the structural properties of fibres	5
5.	Thermal modification, swelling of fibres, micro denier fibres	8
6.	Recent trends governing the fibre modifications	4

**Reference books:**

1. Principle of textile testing ,J.E Booth, Heywood books,1968
2. Coated and laminated textiles,Fung walter ,CRS Press,2002
3. The textile book,Colin Gale & Jasbir Kaur,Berg Publisher New York,2002
4. Low liquor Dyeing and Finishing – Textile Institute, Manchester

<b>Code &amp; Title of the Course</b>	<b>PYT 2106 Physical Methods of Analysis</b>
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	I

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	<b>Fourier Transform Infrared Spectroscopy:</b> Molecular vibrations, frequency shifts associated with structural changes, basic theory of FTIR spectroscopy, interferogram, digitization of interferogram, data points collection, instrumentation and advantages of FTIR spectrophotometry, qualitative and quantitative analysis using infrared spectrophotometry	5
2.	<b>Ultraviolet and visible spectrophotometry:</b> Electronic transitions, spectrum, shift of bands with solvents, isolated double bonds, conjugated dienes, carbonyl compounds, aromatic and hetero-aromatic compounds, application in pollution control and chemical industry	5

3.	<b>Nuclear Magnetic Resonance:</b> Basic principles of NMR phenomenon, relaxation processes, spin-spin interaction, chemical shifts, interpretation of NMR spectra, correlation - hydrogen bonds to carbon and other nuclei, instrumentation, continuous and pulsed NMR, carbon-13	5
4.	<b>X-ray Diffraction:</b> Crystal geometry and structural determination, Bragg's law of X-ray diffraction, powder method, X-ray spectrometers - wide and small angle diffractometers, chemical analysis by X-ray diffraction	2
5.	<b>Particle size analysis:</b> Particle size, sampling, conventional techniques of particle size measurement, light scattering, particle size measurement by light scattering techniques, dynamic light scattering (DLS), fibre-optic dynamic light scattering (FDLS)	5
6.	<b>Chromatography:</b> Basic theory of separation, efficiency, resolution, liquid chromatography, high performance liquid chromatography (HPLC), gas chromatography - columns and detectors, qualitative and quantitative analysis	5
7.	<b>Mass Spectroscopy:</b> Basic principles, ionization of a molecule on electron impact, fragmentation processes in organic compounds, interpretation of mass spectra, molecular weight, molecular formula, instrumentation - different types of ionization sources and magnetic analysers	3

### Reference books:

- 1) Fundamentals of Molecular Spectroscopy - C. Banwell and E. McCash
- 2) Instrumental Methods of Analysis - H. H. Willard, I. M. Merritt and J. A. Dean
- 3) Dye Lasers - F. P. Schafer
- 4) Infrared Spectra of Complex Molecules - L. J. Bellamy
- 5) Fundamentals of Surface and Thin Film Analysis - L. C. Feldman and J. W. Mayer
- 6) X-ray Structure Determination - G. H. Stout and I. H. Jensen
- 7) High Resolution NMR Spectroscopy - E. D. Becker
- 8) Nuclear Magnetic Resonance Spectroscopy—RXHarris
- 9) Physical Methods - R. S. Drago
- 10) Advances in Electrochemical Science and Engineering - I. Gerischer and C. W. Tobias (eds.)



<b>Code &amp; Title of the Course</b>	<b>TXP 2001</b> Critical Review of One Research Publication
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	I

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Student will be required to review single research publication either published as decided by the faculty advisor. In general a written Critical Reviews report needs to be submitted in the form of standard typed report. The student will also be required to make an oral presentation of the review.	30

<b>Code &amp; Title of the Course</b>	<b>TXP 2002 Seminar</b>
<b>Marks</b>	50

<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	I

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Student will be required to prepare critical reviews of selected topics in Chemical Technology and Allied subjects and submit in the form of standard typed report. The student will also be required to make an oral presentation of the review.	30

**Electives from Textile Dept for Semester I**

<b>Code &amp; Title of the Course</b>	<b>TXT 2205</b> Continuous Processing of Textile
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	I

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Continuous pretreatment of textiles-Processes & Machinery	4
2.	Combined pretreatment of different textiles	4
3.	Continuous dyeing of natural & synthetic and blended fabrics-various dyeing processes , different classes of dyes used, dyeing machinery	18
4.	Recent advances in continuous processing	4

**Reference books:**

1. Technology of Scouring and Bleaching, Trotman E.R., Griffin, London, 1968.
2. Technology of Bleaching and Dyeing, Chakraverty, R.R., Trivedi S.S., Vol. 1, Mahajan Publishers Private Ltd., Ahmedabad, 1979.
3. Mercerizing by J.T.Marsh
4. Chemical Technology in the Pre-treatment Processes of Textiles by S.R.Karmakar
5. Encyclopedia of Textile Finishing, Rouette, H.K., Springer Verlag, New York, 2001.
6. Textile Finishing, Hall A.J., Heywood book, London, 1966.
7. An Introduction to Textile Finishing, Marsh J.T., B.I. Publication, Bombay, 1979.
8. Digital printing of textiles , Ujiie.H.,Woodhead publishing,2006

<b>Code &amp; Title of the Course</b>	TXT 2901: Organization and Management in Textile Industry
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	I

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Various types of industrial organizations, personal management, and training	4
2.	Management of raw materials, Linear programming, inventory control, financial management	5
3.	principles of costing, calculation of cost per unit of production, machinery efficiency and production planning	15
4.	WTO, GATT, quality certification, international trade practices, etc	6

**Reference books:**

1. Treatment of Textile Processing effluents, Manivasakam, M. Sakthi Publication, Coimbatore, 1995
2. Water used in Textile Processing : quality, treatment and analysis, Manivasakam, M, Sakthi Publication, Coimbatore, 1995.
3. Heat Economy in Textile Mills, Prabhu M.R., ATIRA Publ., Ahmedabad, 1981.
4. Ecology and Textiles, Shenai.V.A. Sevak Publication, Bombay, 1997.
5. Azo Dyes: facts and figures, Shenai V.A., Sevak Publication, Bombay, 1999.
6. Management of Textile Industry, Dudeja V.P., Textile Trade Press Ahemadabad, 1981.
7. An Introduction to Management in the Dyeing Industry, Park J, SDC Bradford, 1984.

<b>Code &amp; Title of the Course</b>	TXT 2202: Advances in Physical Chemistry of Coloration
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	I

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Techniques of coloration and theories behind them	8
2.	Recent developments in the mechanism of dyeing of different fibres by various classes of dyes	8
3.	Quantitative treatment for kinetics as well as equilibrium dyeing	5
4.	State of dye in solutions and in fibre and dye-fibre interactions	4
5.	Physicochemical aspects of printing	5

**Reference books:**

1. Chemical Technology in the Pre-treatment Processes of Textiles by S.R.Karmakar
2. Textile Chemistry, Peters R.H, Vol-2, Elsevier Publishing Company, London, 1967
3. Chemical Processing of Synthetic Fibres and Blends, Datye K.V., Vaidya A.A., Wiley-Interscience Publ., New York, 1984.
4. Theory of Colouration of Textiles, Johnson A.s, SDC Publ., Bradford, 2nd edition, 1989.
5. Low liquor Dyeing and Finishing – Textile Institute, Manchester
6. Handbook of Synthetic Dyes and Pigments, K.M.Shah, Multitech Publishing Company, Bombay, 2nd edition, 1998
7. Dyeing and Printing, Cockett S.R., Hilton K.A., Leonard Hill Books Ltd., London, 1961.
8. Introduction to Textile Printing, W. Clarke, Newness Butterworths, London, 4th edition, 1977.
9. Guide to Printing Techniques, Naoharu Oyabu, Mahajan Brothers Publish Ltd., Ahmedabad,1978.
10. Nano fibers and Nano technology in textiles, Brown P.J,Woodhead publishing,2007
11. Principle of textile testing ,J.E Booth, Heywood books,1968
12. Digital printing of textiles , Ujiiie.H.,Woodhead publishing,2006
13. Ecotextiles,BTRA,1996
14. Coated and laminated textiles,Fung walter ,CRS Press,2002
15. The textile book,Colin Gale & Jasbir Kaur,Berg Publisher New York,2002

### Semester II

<b>Code &amp; Title of the Course</b>	<b>TXT 2201</b> Advanced Textile Chemistry
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	II

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	New techniques of application of dyes & chemicals viz. transfer, pad, foam, minimum application, etc.	6
2.	Recent developments in various steps of processing such as Pretreatment, dyeing, printing, finishing	16
3.	Eco-friendly processing	8

#### Reference books:

1. Nano fibers and Nano technology in textiles, Brown P.J,Woodhead publishing,2007
2. Principle of textile testing ,J.E Booth, Heywood books,1968
3. Digital printing of textiles , Ujiie.H.,Woodhead publishing,2006
4. Ecotextiles,BTRA,1996
5. Coated and laminated textiles,Fung walter ,CRS Press,2002
6. The textile book,Colin Gale & Jasbir Kaur,Berg Publisher New York,2002

<b>Code &amp; Title of the Course</b>	<b>TXT 2801</b> Energy and Water conservation in processing
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	II

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Water/Energy consumption in the industry	3
2.	Quality and Quantity requirements	2
3.	Reasons for conservation, Approach to conservation	2
4.	Measurements of water/Energy consumption	2
5.	Target figures for water/Energy consumption	3
6.	Water/Energy conservation measures	2
7.	Consequence of water/Energy conservation	2

8.	Energy Conservation in Generating Steam, Sizing, Bleaching, Mercerization, Dyeing, Printing, Finishing & Drying	6
9.	Alternate Energy Sources, Waste Heat Recovery	2
10.	Processes for energy conservation e.g. E-Control, Hot Mercerization, Supercritical Carbon Dioxide (CO <sub>2</sub> ) Dyeing Technique etc	4
11.	Right First Time Approach	2

**Reference books:**

1. Economy, Energy & Environment in textile Wet Processing - ACT, Edited by S.S. Trivedi.
2. Textile Energy & Waste Seminar-Textile Institute, 1997.

<b>Code &amp; Title of the Course</b>	<b>TXT 2301</b> Evaluation of Textiles, Dyes and Auxiliaries
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	II

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Global test methods like ASTM, AATCC, ISO, etc	2
2.	Evaluation, methodology and interpretation of results	10
3.	Standard equipments to be used for testing of textile , parameters of importance	5
4.	Testing of textile auxiliaries	9
5.	Evaluation of dyestuffs in powder and solution forms	4

**Reference books:**



1. BTRA, Orientation programme in Wet Processing – Quality and Process Control (1986)
2. Luniak Bruno, Identification of Textile Fibres
3. AATCC Tech. Manual 2005
4. Textile Preparation and Dyeing by Asim Kumar Roy Choudhary
5. Venkatramn K., The chemistry of synthetic Dyes, 8th Edition, Academic Press, New York, (1978)

<b>Code &amp; Title of the Course</b>	<b>TXT 2802 Environmental Problems in Textile Processing</b>
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	II

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Pollutants in processing industry and their effect on ecology	8
2.	Standards for fresh water as well as waste water	3
3.	Special techniques for reducing pollution by textile chemicals	5
4.	Air pollution problems special to textile processing	6
5.	Noise pollution-levels and reduction techniques	3
6.	Ecofriendly substitutes of chemicals and processes	5

### Reference books:

1. Economy Energy & Environment in textile Wet Processing - ACT, Edited by S.S. Trivedi.
2. Environmental Issues - Technology option for Textile Industry Edited by R. B. Chavan, Indian Journal of Fibre & Textile Research Special Issue - March, 2001.
3. Eco-friendly Textiles Challenges to Textile Industry - Textile Committee.
4. Environmental Success - America Textile Industry, AATCC Symposium - 1996.
5. The Textile Industry: Achieving Our Environmental Commitment - AATCC Symposium - 1994.
6. Textile Energy & Waste Seminar-Textile Institute, 1997.
7. The Management Systems - Quality, Environment, Health & Safety ISO 9001 : 2000, ISO 14001, OHSAS 18001 BY Pranab Kr. Nag, International Certification Services.
8. Water Supplies of the Treatment and Disposal of Effluents by A.H. Little, Textile Institute Monograph series.
9. Handbook of Environments, health & safety by Herman Koren & Michael Biseri
10. Ecology and textiles by Dr. V.A. Shenai
11. Azo dyes - facts & figures by Dr. V.A. Shenai
12. Environmental issues - Technology options for textile industry - book of papers edited by Dr. R.B. Chavan
13. Eco-friendly textiles, challenges to the textile industry - Book of papers by Textile Committee.
14. Guidance for the manufacture of eco-friendly textiles- Book of papers by Textile committee.
15. Eco-friendly textiles - book of papers edited by Prof. M.L. Gulrajani
16. Dyeing & Printing with natural dyes - NCUTE workshop book NT, Delhi.
17. Convention on natural dyes - Book of papers I IT, Delhi
18. Dyeing of wool & silk by Prof. M.L. Gulrajani

<b>Code &amp; Title of the Course</b>	<b>TXP 2003</b> Literature review on the proposed research topic
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	II

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Student will be required to make a detailed review of the proposed research area to be undertaken in the second year under the guidance of the research supervisor. In general a written review report along with his proposed plan of research work emanating from it needs to be submitted in the form of standard typed report. The student will also be required to make an oral presentation of the work plan.	

**Electives from Textile Dept for Semester II**

<b>Code &amp; Title of the Course</b>	<b>TXT 2203</b> Developments in Textile Processing Machinery
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	II

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Developments in machinery for pretreatment, dyeing, printing or finishing	14
2.	Automation and computer as well as microprocessor applications in processing	6
3.	Modifications for energy conservation	6
4.	Effluent treatment plant organization	4

**Reference books:**

1. Technology of Bleaching and Dyeing, Chakraverty, R.R., Trivedi S.S., Vol. 1, Mahajan Publishers Private Ltd., Ahmedabad, 1979.
2. Chemical Technology in the Pre-treatment Processes of Textiles by S.R.Karmakar
3. Introduction to Textile Printing, W. Clarke, Newness Butterworths, London, 4th edition, 1977.
4. Guide to Printing Techniques, Naoharu Oyabu, Mahajan Brothers Publish Ltd., Ahmedabad,1978.

<b>Code &amp; Title of the Course</b>	<b>TXT 2601</b> Biotechnology in Textiles
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	II

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Biotechnology Definition, History and Branches	1
2.	Biodegradable Fibres: Concept, Different Fibres used and their Biodegradability study, Areas of applications	3
3.	Enzymes: Definition and Advantages, Sources of Enzymes, Classification Industrial Manufacturing of Enzymes using Fermentation: Application of different enzymes in various areas of Textiles: Bioscouring, Biodesizing, Biopolishing, silk degumming, effluent treatment.	15
4.	Genetic Engineering:	7

	Concept and Origin Application in Textiles: Bt Cotton, Genetic engineering of Silkworm	
5.	Microbial Dyes: A rising concept in Textiles Introduction, Synthesis, Application, Advantages and Limitations	4

**Reference books:**

1. Textile processing with enzymes, A. Cavaco-Paulo and G. M. Gübitz, Woodhead Publishing Limited
2. Biodegradable and sustainable fibres, R. S. Blackburn, Woodhead Publishing Limited
3. Biodegradable polymers for industrial applications, Ray Smith, Woodhead Publishing Limited

<b>Code &amp; Title of the Course</b>	TXT 2401: Garment Technology
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	II

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Garment Sourcing	2
2.	Garment desizing	2
3.	Manufacturing	4
4.	Fashion	2
5.	Garment processing	8
6.	Garment marketing	3

7.	Accessories used in garments	3
8.	Recent trends in garment processing	6

**Reference books:**

1. Garment Technology for fashion designers by Gerry Cooklin
2. Introduction to clothing Manufacturing by Gerry Cooklin
3. Clothing construction and wardrobe planning by Dora S. Lewin, Mabel Goode Bowers, Manetta Knttunen — The Macmillan co New York
4. Garment Technology by Dr. V.Subramaniam — Winter School booklets 1990
5. BIS publications 1989.
6. Apparel Manufacturing Analysis, Solinger, J., Textile Publisher Inc., New York, 1961.
7. A Introduction to Quality Control for the Apparel Industry, Mehta, P.V.
8. Chemical after treatments of textile by Marks, Atlas & Wooding.
9. Garment Finishing & Care Labelling by S.S.Satsangi, Usha Publishers, 53-B/AC-IV, Shalimar Bagh, New Delhi.
10. Stain Removing Techniques by S.S.Satsangi, Usha Publishers, 53-B/AC-IV, Shalimar Bagh, New Delhi.
11. Fabric Care by Noemia D'SOUZA, New Age International Publishers, Daryagan, New Delhi
12. Garment Processing, Mittal, R.M.

<b>Code &amp; Title of the Course</b>	TXT 2204: Developments in Textile Auxiliary Chemicals
<b>Marks</b>	50
<b>Number of Hours per Week</b>	2+1
<b>Credits</b>	3
<b>Class</b>	M Tech
<b>Semester</b>	II

<b>Sr.No.</b>	<b>Topic</b>	<b>Hrs.</b>
1.	Chemistry of new types of auxiliaries for processing	10
2.	Relation between structure and properties	5
3.	Methods of manufacture	5
4.	Methods for evaluation of auxiliaries as well as for their effectiveness or activity	10

**Reference books:**

1. Colourants and Auxiliaries: Organic Chemistry and Application Properties, Shore, J., SDC, Bradford, 1990.
2. Laundry Detergents, Smulders, E., Wiley VCH, Weinheim, 2002.
3. Chemistry and Textile Auxiliaries, Shenai V.A., Vol. 65, Sevak Publication, Bombay, 2nd edition, 2002.
4. Textile Auxiliaries, Batty, J.W., Dergamon Press, Oxford, 1967.
5. Textile Chemicals and Auxiliaries, Speel H.C., Reinhold Processing Corporation, New York, 1952.