



Veermata Jijabai Technological Institute (V.J.T.I)

(Central Technological Institute, Maharashtra State, INDIA)

H. R. Mahajani Marg, Matunga, Mumbai 400019

Tel.No. +91 22 24198101-02 Fax: +91 22 24102874

Website: www.vjti.ac.in

Programme: Diploma in Textile Manufacture (DTM)

Semester: V

Implemented from: 2017

COURSE CODE	COURSE	GR	TEACHING SCHEME (HRS/WK)				EXAMINATION SCHEME												
			L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR*		OR*		TW		TOTAL MARKS
								Max	Min		Max	Min	Max	Min	Max	Min			
176TM51	Industrial Training (6 weeks in summer break after 4 th Sem)	A	-	-	6#	6#	-	-	-	-	-	-	-	-	75	30	75	30	150
176TM52	Yarn Manufacture IV	C	4	-	3	7	3	80	32	20	100	40	-	-	25	10	25	10	150
176TM53	Fabric Manufacture IV	C	4	-	3	7	3	80	32	20	100	40	-	-	25	10	25	10	150
176TM54	Technical Textile	C	3	1	-	4	3	80	32	20	100	40	-	-	25	10	25	10	150
176TM55	Textile Testing I	C	4	-	3	7	3	80	32	20	100	40	50	20	-	-	50	20	200
176TM56E	Elective-I(Any One)	C	3	-	-	3	3	80	32	20	100	40	-	-	-	-	-	-	100
176TM57	Project	A	-	-	3	3	-	-	-	-	-	-	-	-	50	20	50	20	100
176TM58	Industry Institute Interaction	A	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
	TOTAL		18	1	14	33	-	400	-	100	500	-	50	-	200	-	250	-	1000

Abbreviations: B – Basic; C – Core; A – Applied; M – Management; L – Theory Lecture; T – Tutorial; P – Practical; TH – Theory Paper; MST – Mid-Semester Tests; PR – Practical Exam; OR – Oral Exam; TW- Term Work.

Student Contact Hours per week (Formal Teaching): 33 Hours

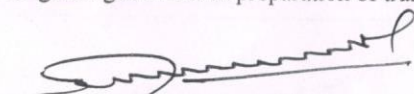
Theory, Practical and Tutorial periods are of 60 minutes duration

Total Marks 1000


* Indicates assessment by External Examiner.

(#): Evaluation of industrial training and its reports will be done in 5th semester and the credits for same will be included in 5th semester. The teaching load assigned to a faculty member for guiding students in preparation of training report and its evaluation for a batch of students (equivalent to practical batch size) is 2 hour/week in 5th semester.



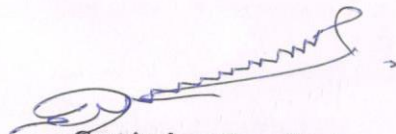

Curriculum Coordinator

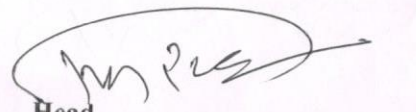

Head
Diploma in Textile Manufacture


Dean – Diploma


List of Third Year Elective Subjects

SR. NO.	SUBJECT CODE	SUBJECT TITLE
1	176TM56E1	Marketing Management
2	176TM56E2	Maintenance management
3	176TM56E3	Industrial Textiles
4	176TM65E4	Apparel Merchandising
5	176TM65E5	Long Staple Spinning and Weaving
6	176TM65E6	Textronics
7	176TM65E7	Entrepreneurship Development
8	176TM65E8	Nanotechnology & Composites
9	176TM65E9	Industrial Engineering
10	176TM65E10	Textile Design & Colour


Curriculum Coordinator

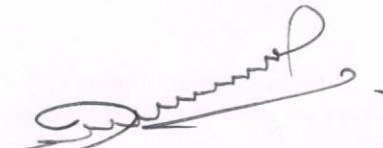

Head
Diploma in Textile Manufacture





Dean - Diploma

List of Third Year Elective Subjects

SR. NO.	SUBJECT CODE	SUBJECT TITLE
1	176TM56E1 / 176TM65E1	Marketing Management
2	176TM56E2 / 176TM65E2	Maintenance management
3	176TM56E3 / 176TM65E3	Industrial Textiles
4	176TM56E4 / 176TM65E4	Apparel Merchandising
5	176TM56E5 / 176TM65E5	Long Staple Spinning and Weaving
6	176TM56E6 / 176TM65E6	Textronics
7	176TM56E7 / 176TM65E7	Entrepreneurship Development
8	176TM56E8 / 176TM65E8	Nanotechnology & Composites
9	176TM56E9 / 176TM65E9	Industrial Engineering
10	176TM56E10 / 176TM65E10	Textile Design & Colour


Curriculum Coordinator


Head
Diploma in Textile Manufacture


Dean - Diploma

DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE MANUFACTURES
PROGRAMME CODE	DTM
SEMESTER	FIFTH
COURSE TITLE	YARN MANUFACTURE- IV
COURSE CODE	176TM52

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
4	0	3	7	3	80	32	20	100	40	-	-	25	10	25	10	150

Course Objectives:

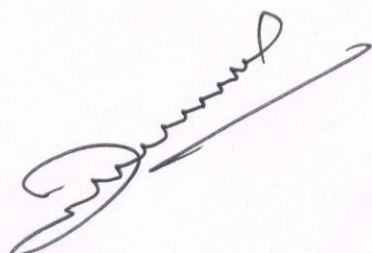
Students must be able to,

- 1) State the objects of the doubling machine, TFO, fancy doubler and describe in detail their construction and working.
- 2) Understand the alternative spinning systems and describe in detail the construction, working of the rotor and single nozzle vortex spinning.
- 3) Calculate speeds, draft and production of the doubler and the fancy doubler.

Course Outcomes:

Student should be able to

CO1	Recall the objects of the doubling machine, TFO, fancy doubler and the function of its operating parts.
CO2	Describe the construction and working of the various mechanisms on the doubling machine, TFO and the fancy doubler.
CO3	Apply the formulae for the calculation of production for the doubled yarns and the fancy yarns.
CO4	Recall the objects of the alternative spinning systems and the function of its operating parts.
CO5	Describe the construction and working of the various parts on the rotor spinning and the single nozzle vortex spinning.




CO6	Compare the ring spinning system with the alternative spinning systems, yarn structures and their properties.
CO7	Plan and perform experiments related to doubling, TFO, Fancy doubler and rotor spinning.
CO8	To apply engineering knowledge for calculating speeds of various parts of machines, use of engineering tools for dismantling and setting of parts safely.

COURSE CONTENT:

SECTION-I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Doubling, TFO, Fancy doubler – Introduction, construction and working	12	16				
	1.1 Brief study of doubling process on a conventional doubling machine and the principle of doubling on TFO. Study of the wet and dry doubling methods, conditioning and singeing.	4	8	CO1	100%		
	1.2 Physical properties of doubled yarns. Effect of direction and amount of twist on properties of doubled yarns. Concept of balanced twist, special doubled yarn products, their manufacturing and requirements. Passage of yarn through TFO twister. Conditioning of yarns – Various methods, objects. Singeing of yarn – Various methods, precautions required in the process.	8	6	CO2		100%	
2	Fancy Doubler – Introduction, construction and working	10	12				
	2.1 Principles of fancy doublers. Study of the marl, gimp, knop, corkscrew, slub, snarl, loop and chenille yarns.	2	8	CO1	100%		
	2.2 Requirement of various mechanisms in the	8	6	CO2		100%	



		machine for producing fancy yarns. Various methods of fancy yarn production. Production of marl, gimp, knop, corkscrew, slub, snarl, loop and chenille yarns.						
3		Calculations for Doubled and Fancy yarn production	10	12				
	3.1	Calculation of twist, resultant count and production of doubled yarns. Calculations of the requirement of component yarns in the production of fancy yarns.	10	12	CO3			100%

SECTION-II								
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level	
4	Alternative Spinning Systems - Introduction	10	16					
	4.1	The operating principle of the various spinning methods; i.e. open end spinning, twist spinning, self-twist spinning, wrap spinning, adhesive process, false twist spinning and air-jet spinning.	10	16	CO4	100%		
5	Rotor Spinning and Single nozzle vortex Spinning- Construction and working	16	12					
	5.1	Construction and working of the rotor spinning machine. Raw material requirements and preparation. Detailed study of the rotor and the navel. Processing of raw material in open-end rotor spinning and selection of process variables.	8	6	CO5		100%	
	5.2	Construction and working of the single nozzle air jet spinning machine. Raw material requirements and preparation. Detailed study of the spinning nozzle and the influence of the various spinning parameters on the yarn quality.	8	6	CO5		100%	
6	Comparison of different spinning systems	6	12					

[Handwritten signature]

[Handwritten signature]



6.1	Comparison of yarn structure of the yarns spun by the various alternate spinning systems, the field of application and the limitations and advantages of the systems.	6	12	CO6			100%
		64	80				
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).							

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

[Handwritten signature]

[Handwritten signature]



List of Practicals/Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1		To study the passage of material in dry and wet doubling frames, general construction of the frame.	3	CO7
2		To calculate speed, twist and production on the doubling frame.	3	CO7 & CO8
3		To study two for one twister.	3	CO7
4		To study the drive and calculations related to TFO.	3	CO7 & CO8
5		To study the different mechanisms used in the production of fancy yarns.	3	CO7 & CO8
6		To study the O.E. spinning, drive and calculations related to rotor machine.	3	CO7 & CO8
7		To spin Cotton/Blended yarn	3	CO7 & CO8
8		To test Cotton/Blended yarn	3	CO7 & CO8
* Minimum 8 and maximum 12 practicals/experiment sessions to be included in a course in a term				

[Handwritten signature]

[Handwritten signature]



Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	R H Gong and R M Wright	Fancy Yarns	The Textile Institute, Woodhead Publishing Limited
2	Dr A R Khare	Elements of ring frame and doubling	Sai book centre
3	H V S Murthy, H S Kulkarni	Two-for-One Technology and technique for spun yarn	Tecoya Publications
4	Dr Herbert Stalder	Alternative Spinning Systems- Volume 6	The Textile Institute
5	Heinz Ernst	Rotor Spinning-Volume 5	The Textile Institute

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	J E Booth	Textile Mathematics- Vol 2	The Textile Institute
2		http://www.rieter.com/en/rikipedia/articles/fibre-preparation/	
3		www.nptel.ac.in	

Sumel

13/2/2020



DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE MANUFACTURES
PROGRAMME CODE	DTM
SEMESTER	FIFTH
COURSE TITLE	FABRIC MANUFACTURE- IV
COURSE CODE	176TM53

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
4	0	3	7	3	80	32	20	100	40	-	-	25	10	25	10	150

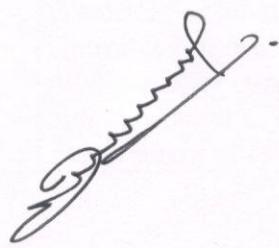
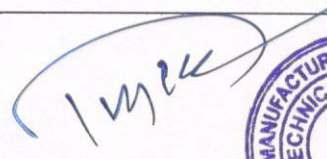
Course Objectives:

It covers topics like unwinding tension variation, warp breaks, Theories of picking, sley movement, heald geometry and unconventional weaving methods like Projectile, Rapier, Air jet and Water jet, Circular looms. It also covers study of filament weaving, Multifilament weaving.

Course Outcomes:

Student should be able to

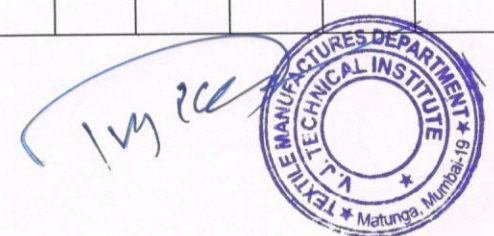
CO1	Describe the yarn tension variation from winding department to weaving department and analyze the causes of warp breaks during weaving
CO2	Understand theories of picking and checking on shuttle loom.
CO3	Understand and describe the movement of the sley during beat up and heald geometry on shuttle loom.
CO4	Define and describe the term Weft Insertion rate, weft velocity, weft accumulator and selvages
CO5	Understand and describe the principle, types and different motions on unconventional weaving loom.
CO6	Plan and perform experiments on warp and weft tension variation, Picker displacement, Heald displacement, Shade Geometry on shuttle loom and study of Airjet and Rapier loom
CO7	Plan and perform experiments on loom erection on shuttle loom.


COURSE CONTENT:

SECTION-I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	<p>Tension variation: Study of yarn tension variation from winding to weaving and its effect on weaving performance.</p> <p>Warp Breaks: Introduction, Causes and analysis of warp breaks, Factors affecting warp breaks.</p>	08	10	CO 1	40%	40%	20%
2	<p>Theories of Picking and checking: Theories of acceleration of shuttle during picking, Elastic properties of picking mechanism, Factors tending towards uniform acceleration, Retardation of shuttle during checking, The rest position of the shuttle, The inertia effect in checking, The Causes of shuttle rebounding, Calculations regarding velocity, acceleration, displacement. the shuttle flight and its timing, loom width and rate of weft insertion,</p>	14	18	CO 2	40%	40%	20%
3	<p>Sley movement : Study of the sley movement and beat up motion. Factors affecting the motion of sley, Sley eccentricity ratio and its effects, The geometry of the sley.</p> <p>Heald geometry: The geometry of the shed, shed depth curves, The warp line, Geometry of shed depth of shed, bending factor at different shed timings. Study of staggering of healds and asymmetric shedding.</p>	10	12	CO 3	40%	40%	20%
SECTION II							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
5	<p>Unconventional weaving: Preparatory weaving required for this machines, Quality of yarn.</p> <p>Shuttleless Looms: Introduction, weft velocity, Weft speed, Weft velocity curves, Weft storage units – types, necessity. Selvedges – Basic function , requirement of selvedges. Classification of</p>	08	10	CO5	40%	40%	20%

[Handwritten signature]



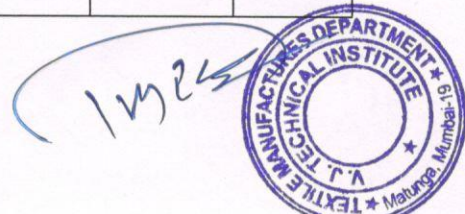
	slevedge						
6	<p>Projectile loom: Principle of weft insertion, projectile preparation for picking, picking mechanism, sequence of weft insertion, Motion of sley. Calculations related to torsion rod picking mechanism. Modern features of projectile loom.</p> <p>Rapier loom: Principles of weft insertion, sequence of weft insertion, classification, Tip to tip and loop transfer, Rapier drives. Modern features of rapier loom. Calculations related to rapier loom.</p> <p>Airjet Loom: Principles of weft insertion, sequence of weft insertion, Air jet nozzles, relay nozzles, types of relay nozzles, control quality of air for air jet looms. Modern features of airjet loom.</p> <p>Water Jet Looms: Nozzles, principle, sequence of weft insertion, Quality of water for water jet looms. Modern features of waterjet loom.</p> <p>Multiphase weaving: Principles of weft insertion, sequence of weft insertion in multiphase looms, circularweaving.</p>	24	30	CO6	40%	40%	20%
<p>Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).</p>							

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of Practicals/Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1		Study of heald displacements on normal and staggering tappets.	3	CO6
2		Study of Picker displacement.	3	CO6
3		Study of Shed Geometry – Depth of shed , bending factor at different shed timing.	3	CO6

[Handwritten signature]



4		Study of warp tension variation on loom – static & dynamic.	3	CO6
5		Study of Weft tension variation during unwinding from the shuttle	3	CO6
6		Study of Airjet loom and Rapier loom	3	CO6
7		Fabric Analysis practical	3	CO6
8		Loom Erection – dismantling of various parts & motion.	3	CO7
9		Loom Erection – Assembly of various parts.	3	CO7
10		Loom Erection – Tuning of various motion, running the loom with shuttle but without warp.	3	CO7
11		Loom Erection – Beam gaiting on loom, Weaving of fabric.	3	CO7
* Minimum 8 and maximum 12 experiments sessions to be included in a course in a term				

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	R. Marks, A. T. C. Robinson	Principles of weaving	The Textile Institute, Manchester
2	Talukdar, Sriramulu and Ajgaonkar	Weaving- Mechanism and Management	Mahajan Publishers Pvt. Ltd., Ahmedabad, 1998
3	M.C. Paliwal and P. D. Khimothi	Process control in weaving	ATIRA 1974

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	P. R. Lord and M. H. Mohamed	Weaving : Conversion of yarn to fabric	Merrow publishing Co. Ltd., England, 2 nd edition, 1988
2	P. K. Banerjee	Principles of fabric formation	CRC Press, 2014
3		Shuttleless weaving	NCUTE Publications
4	http://nptel.ac.in/course.ph.p		



DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE MANUFACTURES
PROGRAMME CODE	DTM
SEMESTER	FIFTH
COURSE TITLE	TECHNICAL TEXTILES
COURSE CODE	176TM54

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	1	0	4	3	80	32	20	100	40	-	-	25	10	25	10	150

Course Objectives:

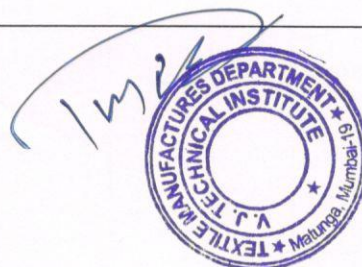
To introduce the concept of textile applications in other industry sectors such as medical, sports, agriculture, construction, transportation, protection, etc.

Course Outcomes:

Student will be able to

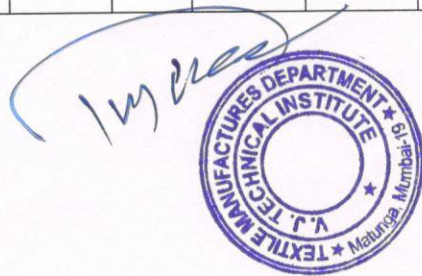
CO1	Differentiate between apparel and technical textiles.
CO2	Classify the different types of technical textiles.
CO3	State the functions and desirable functional characteristics for each class of technical textiles
CO4	Describe the process for manufacturing a technical textile
CO5	Explain the test methods for testing technical textiles.
CO6	Identify and analyze a technical textile product.

[Handwritten signature]



COURSE CONTENT:

SECTION-I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Introduction to technical textiles	02	06				
	1.1 Definition, Significance Difference between technical textiles and apparel textiles.	01	04	CO1	100 %	-	-
	1.2 Classification of technical textiles	01	02	CO2	-	100 %	-
2	Speciality Fibres	04	06				
	2.1 Ultra fine, micro fibres, nano fibers, Hollow fibers, Aramid fibers, Carbon fibers, glass fibers	04	06	CO3	40 %	40 %	20 %
3	Textile Composites	08	12				
	3.1 Reinforcement materials, Matrix materials, Classification of textile reinforcement structures, Preforms, Prepegs.	03	04	CO1	100%	-	-
	3.2 Manufacturing methods: Hand and Machine lay-up, Vacuum bag and pressure bag moulding, Injection moulding, Autoclave, Pultrusion, Compression moulding, Resin Transfer moulding	04	06	CO4	20 %	60 %	20 %
	3.3 Composite Testing- Compression test, Flexural test, Impact toughness test, inter-laminar shear strength test	01	02	CO5	20 %	40 %	40 %
4	Fabric finishing, coating and lamination	08	12				
	4.1 Finishes: Flame retardant finishes, Water and soil repellent finishes and antimicrobial finishes.	02	02	CO3	40 %	40 %	20 %
	4.2 Coating: Coating techniques such as knife coating, Calendar coating, roller, nip, dip and cast coating, Extrusion coating, spray coating, Foam coating, Powder coating	05	08	CO4	30 %	60 %	10 %
	4.3 Laminates: Classification – Rigid, Flexible Fabric & Waterproof breathable laminates Types of laminates – Sheet stock, Post	01	02	CO2	30 %	60 %	10 %



		formed, Tubes and Rods, Molded laminated Plastics, Honeycomb laminates						
5		Agrotexiles and packaging textiles	02	04				
	5.1	Agrotexiles: Functional properties, advantages, applications Agronet types: Properties and functional requirements	01	02	CO2	40 %	60 %	-
	5.2	Packaging textiles: Application, types and materials	01	02	CO3	40 %	60 %	-
SECTION-II								
Unit & Sub-Unit	Topics/Sub-topics		Hours	Marks	CO	R Level	U Level	A Level
6		Geotextiles	06	10				
	6.1	Types of geotextiles: Geogrids, geomembranes and woven and nonwoven geotextiles	01	02	CO2	40 %	40 %	20 %
	6.2	Function of geotextiles: Separation, filtration, reinforcement, drainage and protection.	02	03	CO3	40 %	60 %	-
	6.3	Geotextile properties: Physical, mechanical, hydraulic, environmental.	02	03	CO3	40 %	60 %	-
	6.4	Application of geotextiles: Roadwork, railway works, erosion control, drainage systems.	01	02	CO3	20 %	20 %	60 %
7		Medical textiles	05	10				
	7.1	Characteristics of medical materials and classification. Commodity and Specialty fibers for medical applications	01	03	CO2	60 %	30 %	10 %
	7.2	Textiles for implant : Sutures, Soft tissue, Hard tissue, Vascular, Biomaterials for ophthalmology, Dental Biomaterials Non-implantable textiles: Wound care dressings, bandages Extracorporeal devices: Artificial kidney, lung and liver	03	05	CO3	40 %	60 %	-
	7.3	Healthcare and hygiene products: Bandages, dressings, surgical gowns, cloths, wipes, etc.	01	02	CO3	40 %	60 %	-
8		Filtration fabrics	06	08				

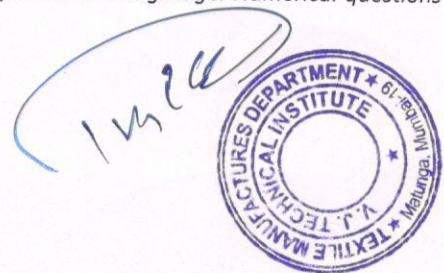
[Handwritten signature]



	8.1	Definition, objective, Mechanism of dry filtration: Interception, Inertial deposition, Random diffusion, Electrostatic deposition, Gravitational forces	01	02	CO3	40 %	60 %	-
	8.2	Mechanism of wet filtration: Screening, Depth filtration, Cake filtration Filter design for dry	03	04	CO3	40 %	60 %	-
	8.3	Filtration Equipments: Filter bags, Rotary drum filters, Rotary disk filters, filter press, Belt filters Dry filtration: Dust Filters – Filters in air conditioning e.g. HVAC, HEPA and ULPA Wet filtration: Solid-liquid separation, e.g. bolting cloth.	02	02	CO4	40 %	60 %	-
9		Automotive and Defense textiles	05	08				
	9.1	Automotive Textiles: Seat belts, air bags, seat covers, Conveyor and transmission belt fabrics, Tyre cord fabrics (tyre cord yarn)	02	03	CO3	40 %	60 %	-
	9.2	Defense Textiles: Parachute fabrics, tent fabrics,	01	02	CO3	40 %	60 %	-
	9.3	Protective clothing: Ballistic Protection- principle, Fibers and Fabrics used, Chemical and Biological Protection, Nuclear Protection, Environment Protection, Camouflage bulletproof fabrics, flame retardant fabrics.	02	03	CO3	40 %	60 %	-
10		Sport textiles	02	04				
	8.1	Nets, balls, sports surfaces: Types and properties	02	04	CO3	40 %	60 %	-
			48	80				

Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.



List of Assignments/Tutorials:

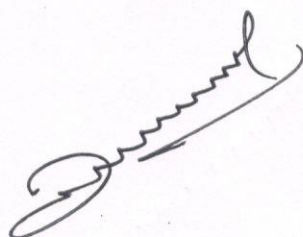
Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1	1	Collect textile samples other than apparels and classify them.	2	CO 6
2	3 to 10	Choose any one sample from technical textile subgroup and analyze its properties	2	CO 6
3	3 to 10	Determine the fiber properties of chosen sample.	2	CO 6
4	3 to 10	Determine the yarn properties of chosen sample.	2	CO 6
5	3 to 10	Determine the fabric properties of chosen sample.	2	CO 6
6	3 to 10	Compare the properties of chosen sample with commercially available products in market.	2	CO 6
7	3 to 10	Prepare a report and presentation for the same.	2	CO 6

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	Sabit Adanaur	Wellington Sear's Handbook of Industrial Textiles	Technomic Publishing Co. Inc, 1995
2	Edited by A R Horrocks and S C Anand	Hand book of Technical Textiles	Woodhead Publication Ltd, 2000

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	Dr. V. K. Kothari	Technical Textiles: Technology, Developments and Applications	IAFL Publications, Progress in Textiles: Science and Technology, Volume 3



DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE MANUFACTURES
PROGRAMME CODE	DTM
SEMESTER	FIFTH
COURSE TITLE	Textile Testing-I
COURSE CODE	176TM55

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPE R HRS	TH		IS T	TOTAL		PR		OR		TW		TOTAL MARK S
					Ma x	Min		Ma x	Min	Max	Min	Max	Min	M ax	Min	
4	0	3	7	3	80	32	20	100	40	50	20		-	50	20	200

Course Objectives:

The content of syllabus of the course will enrich the students with different terminologies employed in textile testing.

Course Outcomes:

- 1) Students will be able to understand the significance of textile testing.
- 2) Students will be able to understand the implementation of statistics in textile testing
- 3) Students will be able to understand the different types of testing taken place for fibres and its importance.
- 4) students will be able to understand yarn testing
- 5) Students will be able to understand various terminologies and principles of testing
- 6) Students will be able to explain the working of testing instruments.
- 7) Students will be able to perform fibre testing
- 8) Students will be able to perform yarn testing

Course Content:

SECTION-I								
Unit & Sub- Unit	Topics/Sub-topics	Hours	Mark s	CO	R Leve l	U Leve l	A Leve l	
1	Introduction to testing and testing standards: Objective of testing, testing quality schemes like wool mark, ISEmark and ASTM	3	6	CO1	40%	40%	20%	

[Handwritten signature]



	standards						
2	Elements in statistics of testing: concept of S.D.,C.V. Mean, Mode Median, Frequency distribution, sampling distribution , Comparison of frequency distribution, normal distribution, standard error, significance test ,t-test, f-test, level of confidence. number of test to be carried out, Quality control charts, Interpretation of control charts. Calculation based on all above.	08	10	CO 2	40%	40%	20%
3	Testing sampling: Selection of samples for testing, Types of sampling, Fibre sampling methods from combed slivers, roving and yarns, Yarn sampling techniques, Fabric Sampling techniques.	3	8	CO 2	40%	40%	20%
4	Fibre dimension and quality testing:- Cotton fibre grading, Fibre length testing, Fibre Fineness testing by various methods and fibre maturity, Trash % ,single Fibre strength and Bundle strength of fibre testing, Moisture relations introduction to regain and moisture content and its measurement,measurement of atmospheric condition,regain humidity relations &hysteresis,effect of regain on fibre properties .	10	14	CO 3			

SECTION II

Unit & Sub-Unit	Topics/Sub-topics	Hours	Mar ks	CO	R Level	U Level	A Level
5	Yarn structure and dimension testing : Yarn numbering system, yarn count measurement, Yarn diameter testing, relation between yarn diameter and count, yarn twist: importance ,effect of twist on various properties of yarn ,twist measurement methods, hairiness of yarn measurement Uster tester-3, Yarn evenness U%, long term short term irregularity of yarn &its measurement.	12	12	CO4	40%	40%	20%
6	Terminology and principles of testing: Terminologies and definitions employed in measurement of tensile properties of textile. Principles of textile testing instruments CRL,CRE& CRT, pendulum lever principal with CRT, , The balance principle, inclined	08	18	CO5	40%	40%	20%



	plane principle.						
7	Construction and working of instruments based on principles of testing : Stelometer, press-ley fibre strength tester, Electronic dynamometer strain guage transducer, Instron yarn , single yarn strength, Yarn CSP testing	04	10	CO6			
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).							

Text Books :

1. Physical Testing of Textiles by B. P. Saville, 1999, Woodhead Publishing Ltd., U. K.
2. Principles of Textile Testing by J. E. Booth, 1961, Heywood Books, London.
3. Testing and Quality Management – Edited by V. K. Kothari, IAFL Publications, New Delhi, 2005

Suggested Reading:

1. Handbook of Textile Testing and Quality Control by E. B. Grover and D. S. Hamby, 1960.

List of Practicals/Assignments/Tutorials:

Module	Practical/Assignment	Approx. contact hours	COS
Module 1	Study of microscope and fibre identification. Convolutions and Ribbon width.	03	C07
Module 2	Measurement of Mean fibre length (oiled plate method) and other parameters of length variation.	03	C07
Module 3	Baer Sorter and fibre length and Weight per unit length of fibres measurement.	03	C07
Module 4	Study of Shirley Analyzer- Cleaning efficiency of Blowroom& Card- Raw cotton, Lap & Sliver testing.	03	C07
Module 5	Measurement of Crimp of fibre – Wool.	03	C07
Module 6	Evaluation of Maturity of cotton by NaoH method, Maximum & minimum width of cotton fibre – microscopically.	03	
Module 7	Measurement of fibre fineness by Shirley fineness tester.	03	C07
Module 8	Study of Shirley moisture meter. Evaluation of moisture regain in fibres, Swelling of fibers	03	
Module 8	Measurement of bundle strength of fibres by stelometer	03	C07
Module 9	Measurement of Count by lea method and lea CSP, Tex number and work of rupture of yarn.	03	CO8
Module 10	Measurement of Single thread strength (Good Brand)	03	C08
Module 11	Measurement of yarn crimp%	03	C08
Module 12	Measurement of yarn count .	03	C08
Module 13	Measurement of Yarn Twist tester.	03	CO8

[Handwritten signature]



DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE MANUFACTURE
PROGRAMME CODE	DTM
SEMESTER	FIFTH/SIXTH
COURSE TITLE	MARKETING MANAGEMENT
COURSE CODE	176TM56E1 / 176TM65E1

Teaching and Examination Scheme:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	0	0	3	3	80	32	20	100	40	-	-	-	-	-	-	100

Course Objectives:

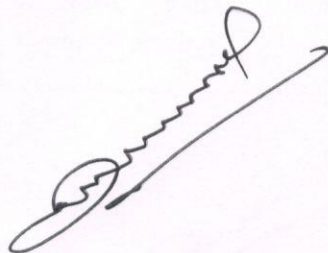
Students must be able to,

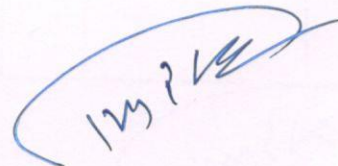
1. Plan, schedule, organize, direct, control and co-ordinate men and product for sale/marketing.
2. Assist developmental activities related to marketing/sales.
3. Establish and run one's own enterprise.

Course Outcomes:

Student should be able to

CO1	Understand the dynamics of marketing in business.
CO2	Acquire the knowledge of consumer behavior and its implications in marketing.
CO3	Understand various elements of product development and pricing.
CO4	Understand various elements of place and promotion mix and also different strategies of place and promotion to be used in business.
CO5	Understand the importance of supply chain management in market.
CO6	Apply the theoretical marketing concepts to the practical situations.
CO7	Demonstrate the ability to carry out a market research projects.
CO8	Acquire the knowledge of the customer relationship and export procedure.





Course Content:

Section I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Scope and Functions OF Management	4	6				
1.1	Definition of Management, Importance of Management, Nature of Management.		3	CO 1	30%	30%	40%
1.2	Functions of Management, Marketing Concepts.		3	CO 1	20%	40%	40%
2	Consumer and Organizational Buying Behavior	8	12				
2.1	Definition of consumer buying behavior, Stages of consumer buying process, Factors affecting on consumer buying behavior.		6	CO 2	30%	40%	30%
2.2	Characteristics of organizational buyers, Stages of organizational buying process, Factors affecting organizational buying behavior, marketing mix variables.		6	CO 2	30%	40%	30%
3	Product Planning, Development and Pricing	6	12				
3.1	Meaning of Product, Classification, New product development including test marketing, Product line decision, Product life cycle.		6	C03	20%	40%	40%
3.2	Policies and strategies, Factors affecting pricing, pricing under different market condition, Types of pricing.			C03	20%	40%	40%



4		Place and Promotion	6	10				
	4.1	Place: Channel, physical distribution.		4	CO 4	30%	30%	40%
	4.2	Meaning of promotion mix, Objective, Element of promotion mix, Integrated marketing communication.		6	CO 4	30%	30%	40%
Section 2								
Unit & Sub-Unit		Topics/Sub-topics	Hours	Mark s	CO	R Level	U Level	A Level
5		Supply Chain Management	6	10				
	5.1	Logistics: Ware housing, Transportation Management.		4	CO5	30%	30%	40%
	5.2	Physical Distribution: Meaning & objective, Role, & relevance of physical distribution in Indian, Inventory & transportation.		6	CO5	20%	40%	40%
6		Market Segmentation	4	6				
	6.1	Types of Market Segmentation, Target and Position.		6	CO6	30%	30%	40%
7		Marketing Research and Forecasting	8	14				
	7.1	Survey and fundamental opinion research, Annual plan control, Profitability control, Strategic control		6	CO7	20%	40%	40%
	7.2	Forecasting market future demand, Techniques of forecasting, Law of demand and supply.		8	CO7	20%	40%	40%
8		Current Trends In Marketing	06	10				
	8.1	An introduction to Customer Relationship Management		10	CO8	20%	30%	30%

[Handwritten signature]

[Handwritten signature]



	(CRM), Rural marketing, Marketing of services and international marketing, Internet marketing, TV enabled market, Franchising, Law of demand and supply.						
		48	80				
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxanomy).							

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	Tapan Panda	Marketing Management	2 nd Ed, Excel Publication
2	Arun Kumar & Meenakshi N	Marketing Management	2 nd Ed, Vikas publication
3	P C Tripathi & P N Reddy	Principles of Management	5 th Ed, McGraw Hill Education (India) PVT.

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	Kotler, Keller, Koshy and Jha	Marketing Management, South Asian Perspective	13 th Ed, Pearson Education
2	Ramaswamy V. S. & Namakumari	Marketing Management	4 th Ed, TMH.
3.	Module Note	Market Segmentation, Target Market Selection, and Positioning	Harvard Business School

[Handwritten signature]

[Handwritten signature]



DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE MANUFACTURE
PROGRAMME CODE	DTM
SEMESTER	FIFTH/SIXTH
COURSE TITLE	MAINTENANCE MANAGEMENT
COURSE CODE	176TM56E2 / 176TM65E2

Teaching and Examination Scheme:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		P R		O R		T W		TOTAL MARKS
					Max	Min		20	Max	Min	Max	Min	Max	Min	Max	
3	0	0	3	3	80	32		100	40	-	-	-	-	-	-	100

Course Objectives:

Students must be able to,

1. Understand the pattern in which failure occur.
2. Realize the need of different systems of maintenance.
3. Realize students the concepts of maintenance and safety in the industry.
4. Understand the importance of the planning and control of various maintenance engineering.

Course Outcomes:

Student should be able to

CO1	Understand the need of maintenance, its functions, types & scheduling
CO2	Explain & use maintenance practices in spinning preparatory & spinning processes
CO3	Explain & use maintenance practices in weaving preparatory & weaving processes
CO4	Understand the concepts of maintenance audit, SQC synchronization and recording the maintenance activities.
CO5	Analyse the purpose of maintenance budgeting and costing.
CO6	To learn the basic and resent trends in maintenance managements





Course Content:

Section 1							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Introduction	08	12				
1.1	Concept, importance & objectives of maintenance management breakdown, function and responsibility of maintenance department.	03	05	CO1	30%	50%	20%
1.2	Planning, steps in planning, planning techniques, scheduling principles, schedule type and techniques, PERT, CPM and other technique for planning	05	07	CO1	20%	40%	40%
2	Spinning Department	12	20				
2.1	Spinning Preparatory, Schedules, precaution and method to be followed during maintenance activities, tools and gauges used for maintenance.	06	10	CO2	30%	40%	30%
2.2	Ring frame & Rotor Spinning Machine, schedules, staff, precautions & methods to be followed, Tools & gauges and lubricant used. Study of aprons & cots used in spinning & their maintenance.	06	10	CO2	30%	40%	30%
3	Machine Audit and SQC	08	08				
3.1	Machine audit – concept and auditing of spinning and weaving machines. Energy conservation in spinning	04	04	CO4	20%	40%	40%
3.2	SQC synchronization with maintenance – SQC activities useful for maintenance in various departments of spinning and weaving.	04	04	CO4	30%	50%	20%

[Handwritten signature]

[Handwritten initials]

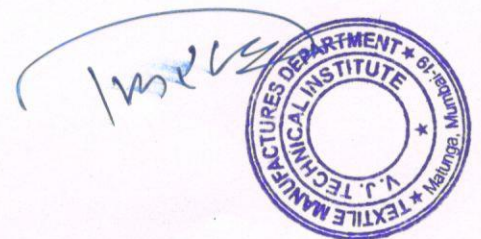


Section 2							
Unit & Sub-Unit	Topics/Sub-topics						
4	Weaving Department	12	20				
4.1	weaving preparatory machines, schedules, critical points of maintenance, precautions to be taken during maintenance operations.	05	08	CO3	30%	40%	30%
4.2	Maintenance of plain & auto loom - Schedules, critical points, precautions, auditing of plain & auto loom. Maintenance of shuttleless weaving machines. Critical maintenance points of various shuttleless weaving machines and different lubricants.	07	12	CO3	20%	40%	40%
5	Maintenance budgeting, costing and cost control	04	10				
5.1	Introduction, classification of maintenance cost, maintenance cost components, maintenance cost analysis, purpose of cost control, maintenance budget	04	10	CO5	40%	40%	20%
6	TERO Technology	04	10				
6.1	Latest concepts training (HRD) of maintenance personal safety assessment, work environment, fire prevention and control, management of emergencies.	04	10	CO6	30%	30%	40%
	Total	48	80				

Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

[Handwritten signature]



Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	T.V.Ratnam & K.P.Chellamani	<i>Maintenance Management in Spinning</i>	5 th Ed, SITRA
2	AT.Shahani, B.P.Todankar, C.K.Mistry and N.Balasubramanian	<i>Maintenance in Ring Spinning</i>	

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1		<i>Maintenance of Textile Machinery (Spinning, Weaving and Processing)</i>	TAIRO publication Baroda (1970)
2		<i>Norms for Mechanical Processing BTRA Bombay - 86</i>	(1979)
3	T.Granovsky	<i>Repair and Adjustment of Textile Machineries</i>	MIR publisher Moscow (1984)

Sumedh



DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE MANUFACTURE
PROGRAMME CODE	DTM
SEMESTER	FIFTH/SIXTH
COURSE TITLE	INDUSTRIAL TEXTILES
COURSE CODE	176TM56E3 / 176TM65E3

Teaching and Examination Scheme:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
3	0	0	3	3	80	32	20	100	40	-	-	-	-	-	-	100

Course Objectives:

Students must be able to,

1. Gain the knowledge of different high-tech fibre, their manufacturing process, properties and applications.
2. Learn different yarn and fabric structure.
3. Get the knowledge of some industrial products.

Course Outcomes:

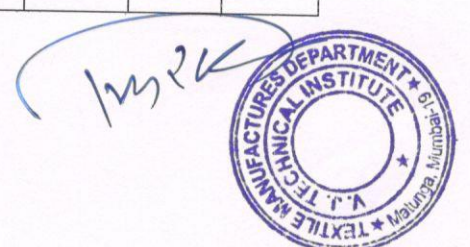
Student should be able to

CO1	Know the different high-tech fibres and their details which is crucially used in Industrial textiles.
CO2	Know industrially used yarn designs and their special features.
CO3	Understand various fabric structures which is mostly used for Industries.
CO4	Explain different industrial textile products and their technical details.



Course Content:

Section 1							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	High Tech Fibres						
1.1	Carbon fiber: Introduction, physical properties, PAN based carbon fiber, carbon nanotubes, application.	04	06	CO1	40%	40%	20%
1.2	Aramid fiber: Introduction, polymer preparation, spinning, structure and properties, applications.	04	07	CO1	40%	40%	20%
1.3	Glass fiber: introduction, glass for fibers, fiber manufacture, fiber finish, glass fiber properties, applications.	04	06	CO1	40%	40%	20%
1.4	HPPE fibre: introduction, fibre manufacturing, fibre characteristics, properties, applications.	04	06	CO1	40%	40%	20%
2	Industrial Yarns						
2.1	Industrial sewing thread: thread twist, ply and cord, thread classification, sewability parameters, applications.	04	05	CO2	30%	50%	20%
2.2	Conductive yarn: introduction, manufacturing, and structure of electro conductive yarns, measurements, applications.	04	05	CO2	30%	50%	20%
2.3	Rope: raw materials, formation of rope structures, properties of rope & applications.	03	05	CO2	30%	50%	20%
Unit & Sub-Unit	Topics/Sub-topics						

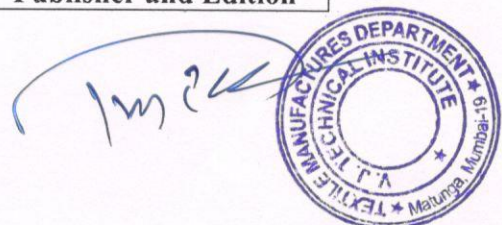


3	Industrial Fabric						
3.1	Camouflage Fabric: colours & patterns, camouflage design consideration, evaluation of camouflage pattern design.	04	07	CO3	30%	40%	30%
3.2	Multiaxial warp knitted structures: structure, properties, production method, applications.	03	07	CO3	30%	40%	30%
3.3	Triaxial fabric: introduction, classification, variations, properties, advantages, applications	03	06	CO 3	30%	40%	30%
3.4	Knotted Fabric: introduction, types of knotted fabric, production method, applications.	03	06	CO3	30%	40%	30%
3.5	Braided Fabric: introduction, classifying braids, the geometry of braided structure, applications.	03	05	CO3	30%	40%	30%
4	Industrial Textile Products						
	Flex banners, tire cord, tarpaulins, paper machine clothing	05	09	CO4	10%	40%	50%
	Total	48	80				
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).							

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Text Books:

Sr.	Author	Title	Publisher and Edition
-----	--------	-------	-----------------------

No.			
1	J W S Hearle	<i>High Performance fibres</i>	Woodhead publishing limited
2	R. H. Gong	<i>Specialist yarn and fabric structures</i>	Woodhead publishing limited

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	Sabit Adanur	<i>Wellingtons Sears Handbook of Industrial Textiles</i>	Technomic Publishing CO. INC.
2	Prof. Dr. Huseyin Kadoglu	<i>Conductive Yarns and Their Use In Technical Textles</i>	Technical Textile.Net A fibre 2 fashion venture
3	E Sparks	<i>Advances in Military Textiles and Personal Equipment</i>	Woodhead Publishing
4.	H. A. McKenna, J. W. S. Hearle and N. O'Hear	<i>Handbook of Fibre Rope Technology</i>	Woodhead Publishing Limited.

[Handwritten signature]



DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE MANUFACTURES
PROGRAMME CODE	DTM
SEMESTER	FIFTH/SIXTH
COURSE TITLE	APPAREL MERCHANDISING
COURSE CODE	176TM56E4 / 176TM65E4

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	0	0	3	3	80	32	20	100	40	-	-	-	-	-	-	100

Rationale: The latest trend in textiles is high demand for fashion oriented, value added readymade garments both locally and globally. The subject deals with apparel merchandising and apparel export merchandising, apparel retailing merchandising and visual merchandising of garments. In this subject export documentation and shipment procedure will help the student to understand the export related procedures.

Course Objective:

To impart the detailed knowledge of apparel merchandising.

Course Outcomes:

After completing this course, Student should be able to

CO1	Define merchandising and its techniques
CO2	Explain the principles of merchandising and the detail process of apparel export merchandising
CO3	Demonstrate the apparel fashion merchandising
CO4	Describe the shipment process in export merchandising
CO5	Identify sourcing of material in apparel merchandising
CO6	Describe in detail visual merchandising
CO7	Describe in detail retail merchandising

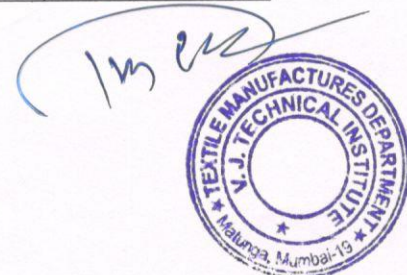


Section-I

Topics/Sub-topics		Hours	Marks	CO	R Level	U Level	A Level
1	Merchandising: Introduction to Merchandising, Significance of Merchandising in Apparel industry Categories of Apparel Merchandising Process flow of Apparel Merchandising Role and functions of merchandiser	4	8	CO1	40	40	20
2	Apparel Export merchandising: Introduction and principles Merchandising, Process flow – Buying sourcing and inventory planning, Buying communication, Enquiry and sampling, Pre-costing and reply, Order confirm, Master Planning Scheduling or critical path, Programming Samples and its types, Accessories sourcing and purchase, Inspection, Testing, Cutting, Approvals	04	10	CO2	40	40	20
3	Apparel fashion merchandising: Apparel Fashion Concept of fashion Merchandising Principles of fashion, Fashion cycle leadership theories ,Organization for fashion merchandising Apparel fashion merchandising process ,Fashion forecasting Fashion shows	11	16	CO3	40	40	20
4	Shipment: Shipment flow, Container details, Leasing methods Document negotiation process, Functions of forwarding agents, Port and shipping lines	05	06	CO4	40	40	20

Section -II

Topics/Sub-topics		Hours	Marks	CO	R Level	U Level	A Level
5	Export documentation: Introduction to export documentation, Commercial Documentation Documents, Regulatory documents, Documents related to goods, Documents related to shipment Documents related to payments, Documents related to Inspection, Documents related to excisable goods	08	12	CO5	60	20	20
6	Merchandising according to domestic and international demand, requirements	04	08	CO5	40	40	20

	and supply; Application of information technology in merchandising; Costing with respect to export and domestic market						
7	Visual merchandising: Introduction to visual merchandising ,Merchandising Functions of visual merchandising Elements of visual merchandising Visual merchandising techniques	06	10	CO6	20	60	20
8	Apparel retail merchandising: Introduction, Functions, Types of retailing, Apparel retail merchandising process, Consumer Vs retailing, Prospects of apparel retailing in India	06	10	CO7	20	60	20
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).							

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

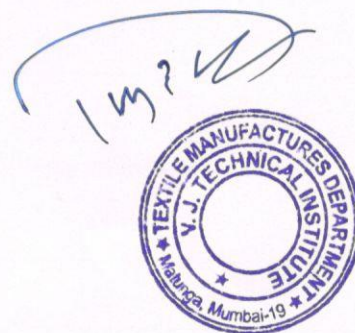
Learning Resources:-

Text Books:

1 Apparel Merchandising, An Integrated Approach, M. Krishnakumar, Abhishek Publications, Chandigarh, First Edition, 2010.

References :

1 Marketing Textiles, From Fiber to Retail, Allen C. Cohen, Fairchild Publication, New York, 1989



DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE MANUFACTURES
PROGRAMME CODE	DTM
SEMESTER	FIFTH/SIXTH
COURSE TITLE	LONG STAPLE SPINNING AND WEAVING
COURSE CODE	176TM56E5 / 176TM65E5

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	0	0	3	3	80	32	20	100	40	-	-	-	-	-	-	100

Course Objectives:

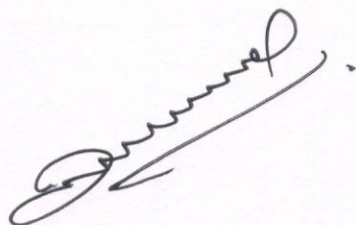
Students must be able to,

1. Understand the classification, physical and chemical properties of long staple fibres.
2. State the specific features of long staple fibres influencing the performance at various stages of spinning and weaving.
3. State the objects of mechanical processing of bast, leaf and fruit fibres and describe in detail it's working.
4. Understand the process flow in production and get exposure to the processing of woollen and worsted yarns and fabrics.
5. Understand the process flow in production and get exposure to the processing of silk yarn and fabrics.
6. Knowledge of applications of Long staple fibres in different sectors.

Course Outcomes:

Student should be able to

CO1	Recall the classification, physical and chemical properties of long staple fibres.
CO2	Describe the working of the various mechanisms and specific features of long staple fibres influencing the performance at various stages of spinning and weaving.
CO3	Comparison of the different methods of production and Important applications of long staple fibres in different sectors of textile with a focus on the woollen and silk industry.





Course Content:

SECTION-I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Long staple fibres - Introduction	7	28				
1.1	Introduction to the Varieties, origin, classification, grading. Introduction to the physical and chemical properties of long staple fibres.	3	16	CO1	100%		
1.2	Applications of long staple fibres, yarns, and fabrics in various sectors.	4	12	CO3			100%
2	Bast fibres - Jute, Flax (linen), Hemp, Ramie	10	8				
2.1	Extraction method, Preparation, batching, carding, drawing, roving and ring spinning.	5	4	CO2		100%	
2.2	Construction and working of the different basic motions in weaving.	5	4	CO2		100%	
3	Leaf and fruit-based fibres – Sisal, Coir etc.	7	6				
3.1	Fibre extraction method and preparation.	7	6	CO2		100%	

SECTION-II							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
4	Animal hair/protein fibres - Wool	10	8				
4.1	Manufacturing of woolen yarn - preliminary processes, blending or mixing, woolen carding, woolen spinning, woolen yarn numbering.	6	4	CO2		100%	
4.2	Manufacturing of worsted yarn – worsted carding, gilling, and combing, worsted drawing, worsted yarn spinning, worsted yarn numbering.	4	4	CO2		100%	
5	Animal Protein fibres – Silk	10	24				

[Handwritten signature]



5.1	Different types of silk – Mulberry, Tussar, Muga, Eri etc. various devices used in silk reeling.	4	20	CO1	100%		
5.2	Manufacturing of silk fabrics. Raw silk reeling: methods, Production of spun silk. Evaluation of silk fabric handle.	6	4	CO2		100%	
6	Comparison with other animal hair fibres	4	12				
6.1	Woolen yarn vs. worsted yarn; Different applications of silk fabric. Comparison of Cashmere, Mohair, Angora, Alpaca etc. with the other long staple fibres.	4	12	CO3			100%
		48	80				

Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Recommended References:

1. Corbman, B.P. - Textiles:Fibre to Fabric, McGraw Hill International Edition, 1983
2. R.R.Atkinson – Jute Fibre to yarn, B.I. Publication, Bombay, India, 1965.
3. Richards, RTD, Sykes, A.B. – Wollen Yarn Manufacture, The Textile Institute, 1994
4. Tomar, R.S. – Hand Book of Wool and Blended Suiting Process, Woodhead Publishing, ISBN: 978-1-84569-954-3.
5. Matsudaira, M., Kawabata, S. – A Study of The Mechanical properties of Woven Silk Fabrics (Part I, II, III), Journal of The Textile Institute, 1988, 79 (3), pp. 490-503.



COURSE NAME	DIPLOMA IN TEXTILE MANUFACTURE
COURSE CODE	DTM
SEMESTER	FIFTH/SIXTH
SUBJECT TITLE	TEXTRONICS
SUBJECT CODE	176TM56E6 / 176TM65E6

Teaching and Examination Scheme:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	0	0	3	3	80	32	20	100	40	-	-	-	-	-	-	100

Course Objectives:

Students must be able to,

1. Know the basic knowledge of electronic sensors, power electronics, transducers, transistor and PLC to make the automation in the Textile industry to get good quality of product with minimum time.

Course Outcomes:

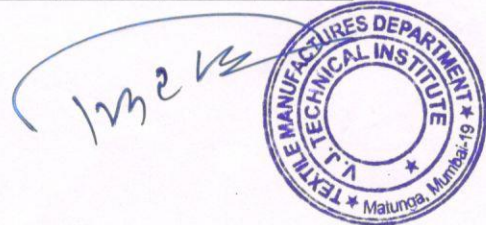
Student should be able to

CO1	Understand fundamentals of transistor and its application in the textile machineries.
CO2	Learn the digital electronics which handle digital signals in the manufacturing process.
CO3	Learn the modification of transistor i.e. power electronics which convert one form of power to another using various devices.
CO4	Use electromagnetic devices and switches to the textile industry.
CO5	Know the functioning of various sensors and actuators in textile machines.
CO6	Apply knowledge of microcontroller and PLC in atomization in textile industry.



Course Content:

SECTION 1							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Transistor and It's Application	09	15				
1.1	BJT Principle, construction and working, BJT as an amplifier and switch	03	05	CO 1	20%	40%	40%
1.2	FET Principle, construction, working and application, MOSFET Principle, construction, working and its application.	06	10	CO 1	20%	40%	40%
2	Digital Electronics	06	10				
2.1	Design of Gates: AND, OR, XOR, NANN, NOR, simplification of logic expression of Boolean Algebra, De Morgan's Theorem.	03	05	CO 2	30%	40%	30%
2.2	Flip Flops: D, T, JK, SR	03	05	CO 2	30%	40%	30%
3	Industrial Electronics	09	15				
3.1	Principle, Construction, Working and application of SCR, DIAC & TRIAC, Power Transistor, Power MOSFET.	09	15	CO 3	20%	40%	40%
SECTION 2							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
4	Transducers	06	10				
4.1	Introduction of transducer, construction and application of	06	10	CO	20%	40%	40%



		various transducer like humidity, pressure, Strain gauge, Thermocouple, Thermistor, RTD, LVDT			4			
5		Sensors	06	10				
	5.1	Operation of smoke detector circuit using LDR in Blow Room, Phototransistor used to measure speed of DC motor, Optoelectronics sensor used in speed frame	06	10	CO 5	20%	40%	40%
6		Ladder Diagram Fundamentals	06	10				
	6.1	Basic components and their symbols, control transformer, fuses, switches, indicator, lamps, relay, timers, fundamentals ladder diagram, machine control terminology.	06	10	CO 6	40%	30%	30%
7		Programmable Logic Controller	06	10				
	7.1	Basic arrangement of PLC, Principles of PLC, Mechanical Parts of PLC System, Selection of PLC, Application & Commercial specification of PLC	06	10	CO 6	20%	40%	40%
		Total	48	80				
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).								

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	B.L.Theraja,	<i>Fundamentals of Electrical Engineering and Electronics</i>	S.Chand & Company
2	Hiren Joshi, Gauri Joshi, A.K.Gupta	Electronic Control for Textile Machinery	NCUTE



3	L. Ashok Kumar & M. Senthil Kumar	Automation in Textile Machinery (Instrumentation and Control system Design Principle)	Taylor and Francis Group
---	---	---	--------------------------

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1.	Robert Boylestad & Louis Hashesky	Electronic Devices & Circuit Theory	9 th Ed, Prentice Hall India Pvt. Ltd.
2	R.P.Jain	Modern Digital Electronics	4 th Ed, Tata McGraw Hill Publishing Company
3.	M.D.Singh & K.B. Khanchandani	Power Electronics	2 nd Ed, Tata McGraw Hill Publishing Company
4.	A.K.Sawhney	Electrical and Electronic measurements & Instrumentations	Dhanpatray & Co.
5.	John R Hackworth & Frederick D Hackworth	Programmable Logic Controllers: Programming Method & Application	1 st Ed, Jr. Person Education

[Handwritten signature]

[Handwritten signature]



DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE MANUFACTURES
PROGRAMME CODE	DTM
SEMESTER	FIFTH/SIXTH
COURSE TITLE	ENTREPRENEURSHIP DEVELOPMENT
COURSE CODE	176TM56E7 / 176TM65E7

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	0	0	3	3	80	32	20	100	40	-	-	-	-	-	-	100

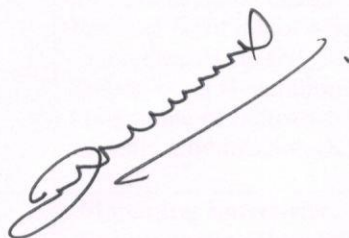
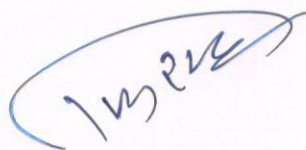
Course Objectives:

Globalisation, Liberalization and privatization along with revolution in information technology have opened up new opportunities transforming lives of masses. In this context, there is immense opportunity of establishing manufacturing, service, trading, marketing and consultancy enterprises by diploma engineer. Our fast growing economy provides ample scope for diploma engineers to succeed as an entrepreneur. Entrepreneurship requires distinct skill sets which are attempted to be developed through this course. To begin with, this course aims to develop the competency and related outcomes in order to start small enterprise.

Course Outcomes:

Student should be able to

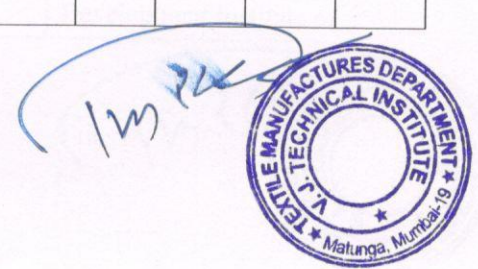
CO1	Identify entrepreneurial traits
CO2	Identify business opportunities
CO3	Use the support system to zero down business idea
CO4	Develop comprehensive business plans
CO5	Prepare plans to manage the enterprise effectively


Course Content:

SECTION-I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Mark s	CO	R Leve l	U Leve l	A Leve l
1	<p>Entrepreneurship development concept and scope: Entrepreneurship as a career, Traits of successful intrapreneur/entrepreneur: consistency, creativity, initiative, independent decision making, assertiveness, persuasion, persistent, information seeking, handling business communication, commitment to work contract, calculated risk taking. Entrepreneurship: scope in local and global market Intrapreneur and Entrepreneur Types of enterprises and their features: Manufacturing, service and trading, Steps in setting up a business</p>	06	10	CO1	50%	25%	25%
2	<p>Entrepreneurial opportunities and selection process: Product/services selection: Process, Core competence, Product/service life cycle, new product/service development process, mortality curve, creativity and innovation in product/service modification/development. Process selection: Technology life cycle, forms and cost of transformation, factors affecting process selection, location for an industry, material handling. Market study procedures: questionnaire design, sampling market survey, data analysis Getting information from concerned stakeholders such as Maharashtra Centre for Entrepreneurship development(MCED), National Institute for Micro, Small and Medium Entrepreneurship (NI- MSME), Prime Minister Employment Generation Program(PMEGP), Directorate of Industries (DI), Khadi Village Industry Commission (KVIC),</p>	12	20	CO2	20%	40%	40%
3	<p>Managing Enterprise: Unique Selling Proposition(USP): Identification, developing a marketing plan Preparing strategies for handling business: Policy making, negotiation and bargaining techniques</p>	06	10	CO3	25%	50%	25%

[Handwritten signature]

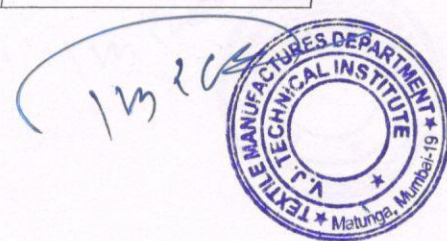


		<p>Risk Management: Planning for calculated risk taking, initiation with low cost projects, integrated futuristic planning, anger investor, venture capitalist.</p> <p>Incubation centres: Role and procedures</p>						
SECTION II								
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level	
4	<p>Support systems: Categories of MSME, ancillary industries,</p> <p>Support systems: Government agencies, MCED, NI-MSME, PMEGP, DI, KVIC.</p> <p>Support agencies for entrepreneurship guidance, training, registration, technical consultation, technology transfer and quality control, Marketing and finance.</p> <p>Break even point, return on investment and return on sales</p>	10	18	CO4	40%	40%	20%	
5	<p>Business plan preparation: Sources of product for business: Feasible study Ownership, Capital, Budgeting, Matching entrepreneur with the project, feasibility report preparation and evaluation criteria.</p>	14	22	CO5	40%	30%	30%	
	Total	48	80					
<p>Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).</p>								

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	Mehta, Monica	The Entrepreneurial instinct: How Everyone Has The Innate Ability to start a Successful Small Business	McGraw Hill Publication, New Delhi 2012, ISBN 978-0-07 179747-9
2	Hisrich R.D.	Entrepreneurship	McGraw-Hill Education New Delhi. 2013 ISBN-13:978-1259001635
3	Sareen S.B.	Part I Readings in Entrepreneurship Education	Entrepreneurship Development Institute of



			India (EDI), GOI, 2016, Ahmedabad, ISBN: 978-0078029196
4	Gujral, Raman	Reading Material of Entrepreneurship Awareness Camp	Entrepreneurship Development Institute of India (EDI), GOI, 2016, Ahmedabad.
5	Chitale A.K.	Project Design and Manufacturing	PHI Learning, New Delhi, 2014; ISBN:9788120348738
6	Charantimath Poornima	Entrepreneurship Development Small Business Entrepreneurship	Pearson Education India, New Delhi, ISBN:9788131762264
7	Khanka S.S.	Entrepreneurship and Small Business Management	S. Chand and Sons, New Delhi, ISBN:978-93-5161-094-6
8	S. Anilkumar	Entrepreneurship Development	New Age International, New Delhi, ISBN:9788122414349

Reference books and Websites:

Suggested Software/Learning Websites:

1	MCED Books links	http://www.mced.nic.in/UdyojakSpecial.aspx?linktype=Udyojak
2	MCED Project and Plan details	http://www.mced.nic.in/allproducts.aspx
3	The National Institution for Entrepreneurship and Small Business Development	http://niesbud.nic.in/Publication.html
4	Courses: The National Institution for Entrepreneurship and Small Business Development	http://niesbud.nic.in/docs/1standardized.pdf
5	Entrepreneur.com	https://www.entrepreneur.com/lists
6	Government Sponsored Schemes	https://www.nabard.org/content1.aspx?id=23andcatid=23andmid=530
7	NABARD- Information Centre	https://www.nabard.org/Tenders.aspx?id=501andid=24
8	NABARD- What We Do	https://www.nabard.org/content1.aspx?id=8andcatid=8andmid=488
9	Market Review	https://www.businessstoday.in/markets
10	Start Up India	http://www.startupindia.gov.in/pdf/file.php?title=startup%20India%20Action%20Planandtype=Actionandq=Action%20Plan.pdfandcontent_type=Actionandsubmenupoint=action
11	About -Entrepreneurship Development Institute of India (EDII)	https://www.ediindia.org/institute.html
12	EDII- Centres	https://www.ediindia.org/centres.html

[Handwritten signature]



COURSE NAME	DIPLOMA IN TEXTILE MANUFACTURE
COURSE CODE	DTM
SEMESTER	FIFTH/SIXTH
SUBJECT TITLE	NANOTECHNOLOGY AND COMPOSITES
SUBJECT CODE	176TM56E8 / 176TM65E8

Teaching and Examination Scheme:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
3	0	0	3	3	80	32	20	100	40	-	-	-	-	-	-	100

Course Objectives:

Students must be able to,

1. To motivate the students about the important of the nanotechnology and its various application.
2. To present knowledge of composite, its structure and use of various forms and textiles in the field of composites.

Course Outcomes:

Student should be able to

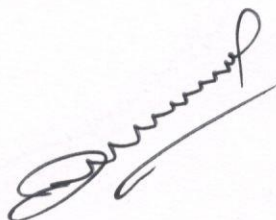
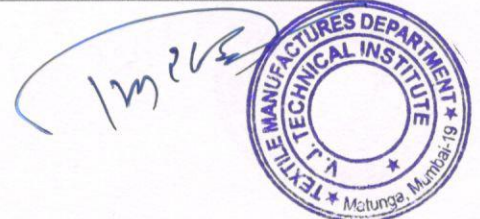
CO1	Learn the advance in the field of nanomaterial's used in the textile and allied area.
CO2	Design the methodology to resolve societal and environmental implications of nanoscience and technology.
CO3	Develop the innovative methodology to meet the emerging challenges and opportunity both at national and international level relating to nanotechnology and its potential application in the advance textile area.
CO4	Understand the importance of composites in Textile filed.
CO5	Learn the principle and production process of composite.
CO6	Formulate application of textile composites in various field of engineering.

[Handwritten signature]

[Handwritten signature]



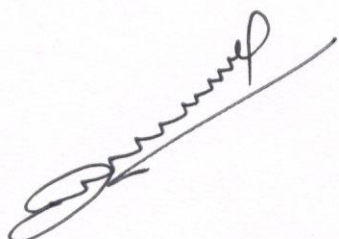
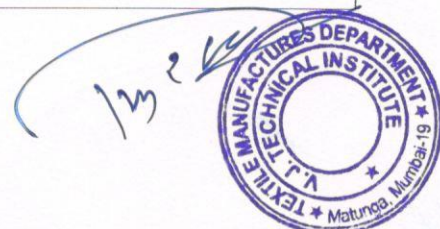
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Introduction to Nanotechnology:	04	10	CO1	30%	30%	40%
1.1	Fundamental of Nanoscience Nanotechnology, Introduction to nanomaterial: Definition, Concept, Requirement						
2	Production of Nanomaterials:	08	12	CO2	30%	30%	40%
2.1	Principle and production of nanomaterials, nanoparticles, nanospheres etc, Top down and bottom down approaches for production of nanomaterials. Electrospinning technique						
3	Nanofibers for Textile Applications:	08	12	CO3	20%	40%	40%
3.1	Production of nanofibers, Applications of Nanofibers in Air and water filtration, Controlled drug delivery, Tissue reconstruction, Barrier materials, Anti-microbial fabric other advanced technique in field of various engineering						
4	Nano-Enhanced Finishing Treatments:	04	06	CO3	20%	40%	40%
4.1	Nano formulations for dyes, Nano coatings and nano finishing.						

SECTION 2

Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
5	Introduction	04	10	CO4	30%	30%	40%
5.1	Importance of composites materials, Classification and fibre formation, composition, structure, properties.						
6	Principle and Classification	12	20				
6.1	Principles and Instrumental Technique (SEM, XRD, AFM, TEM, Particle size and Particle size distribution, Stability etc).	04	08	CO5	30%	30%	40%
6.2	Classification of composites on the basis of reinforcement and matrix, Major composite classes: polymer matrix, metal matrix, ceramic matrix, carbon/carbon, and intermetallic composites. Hybrid composites, Laminated composites. Examples of each class of composites. Particulates, Flakes, Whiskers, Fibers	08	12	CO5	20%	40%	40%
7	Applications	08	10	CO6	30%	30%	40%
7.1	Applications of advanced composite materials. Environmental effects in Composites, Green composites. ; Synthesis and Properties of Nanocomposites.						
	Total	48	80				

Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).

Course Content:

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	P Brown and K Stevens	Nanofibers and nanotechnology in textiles	1. USA Woodhead
2	Long A C	Design and Manufacture of Textile Composites	Woodhead Publishing Ltd., UK, 2005.

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1.	Adanur, S., and Ascioğlu, B.	Processing Characterization of PVA Nanofibers in Electrospinning	Hilton Head
2	Gupta L.	Advanced Composite Materials",	Himalayan Books



DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE MANUFACTURES
PROGRAMME CODE	DTM
SEMESTER	FIFTH /SIXTH
COURSE TITLE	INDUSTRIAL ENGINEERING
COURSE CODE	176TM56E8 / 176TM65E8

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	-	-	3	3	80	32	20	100	40	-	-	-	-	-	-	100

Course Objectives:

To help the student to attain the following industry identified competency through various teaching learning experiences.
Apply Industrial Engineering techniques to improve the production and processes for assuring quality of products

Course Outcomes:

Student will be able to

CO1	Understand importance of productivity and factors for improvement in productivity
CO2	Apply work study techniques to optimize manufacturing process
CO3	Use PERT and CPM techniques for scheduling and controlling the manufacturing activities
CO4	Apply inventory control methods for managing inventory
CO5	Use SQC and Draw & Interpret control charts for variable and attribute data.
CO6	Formulate and solve Linear Programming Problem.

[Handwritten signature]

[Handwritten signature]



Course Content:

SECTION-I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Production System	02	04				
1.1	Introduction to Industrial Engineering: Definition, Need, Objectives and Scope Production - Definition , Types of production systems	01	02	CO1	60 %	40 %	-
1.2	Productivity - Importance , Measurement of Productivity , Reasons for low productivity, Techniques of improving productivity	01	02	CO1	40 %	60 %	-
2	Work study	10	12				
2.1	Work study: Introduction, Definition, significance, Procedure of Work study, Comparison between Method study (Motion Study) and Time study (Work Measurement)	2	2	CO2	40 %	60 %	-
2.2	Method Study: Definition, objectives, procedure, selection of work. Recording Techniques - Process Charts – Outline process chart, Flow process chart, Two Hand process chart, Multiple activity chart, Flow diagram, String diagram, Travel chart.	4	5	CO2	10 %	30 %	60 %
2.3	Work Measurement – Definition, objectives, procedure, Time Study, Time Study Equipments: Stop Watch Work measurement techniques: Time Study, Standard Time, Work Sampling, Allowances, Calculation of Standard Time, Concept of Job evaluation and Merit Rating.	4	5	CO2	10 %	30 %	60 %
3	Network Analysis	07	14				
3.1	PERT and CPM: Comparison and application	01	02	CO3	80 %	20 %	-
3.2	PERT and CPM: Network construction, Rules, analysis and problems based on Network	06	12	CO3	10 %	10 %	80 %

1/2/22

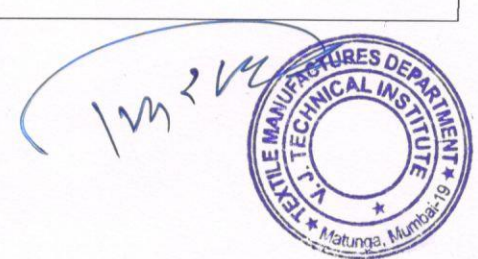


4		Inventory Control	05	10				
	4.1	Introduction, methods of inventory management, inventory cost relationship	01	02	CO4	60 %	40 %	-
	4.2	Economic Order Quantity: EOQ Model, Study and Calculation of EOQ	02	04	CO4	10 %	30 %	60 %
	4.3	ABC analysis	02	04	CO4	10 %	30 %	60 %

SECTION-II

Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level	
5		Statistical Quality Control	08	12				
	5.1	Quality control: Objectives, Principles and advantages Statistical Quality Control: Meaning and importance, Variable and attribute Measurement	02	04	CO5	80 %	20 %	-
	5.2	Acceptance Sampling: Concept, Comparison with 100% inspection, Operating Characteristics Curve, types of sampling plans, sampling methods, merits and demerits	06	08	CO5	40 %	60 %	-
6		Control Charts	08	14				
	6.1	Introduction, Purpose, Types, Advantages and limitation	02	04	CO5	80 %	20 %	-
	6.2	Control charts for variables – X and R charts Control charts for attributes p, np, C charts, Problem based on control charts	06	10	CO5	10 %	10 %	80 %
7		Operational Research	08	14				
	7.1	Introduction and Tools of O.R.	01	02	CO6	90 %	10 %	-
	7.2	Linear Programming: Formulation of LP problem, Solving LP problem using graphical and simplex method	07	12	CO6	-	10 %	90 %
			48	80				

Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).



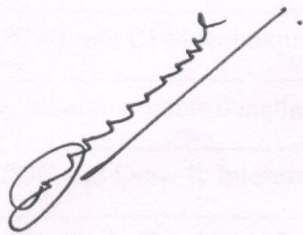
Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	ILO	Work study	ILO Geneva
2	Dr. B. Kumar	Industrial Engineering and Management	Khanna Publishers
3.	O.P. Khanna	Industrial Engineering and Management	Dhanpat Rai & Sons
4.	Dr. S. Dalela and Mansoor Ali	A text book of Industrial Engg. and Management system	Standard Publisher Distributors

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	Baffna , Sarin	Modern Production and Operations Management	--



DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE MANUFACTURE
PROGRAMME CODE	DTM
SEMESTER	FIFTH/SIXTH
COURSE TITLE	TEXTILE DESIGN AND COLOUR
COURSE CODE	176TM56E10 / 176TM65E10

Teaching and Examination Scheme:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
3	0	0	3	3	80	32	20	100	40	-	-	-	-	-	-	100

Course Objectives:

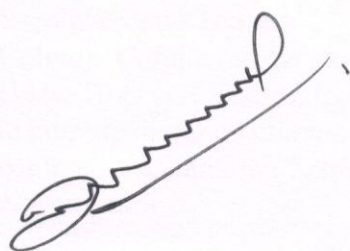
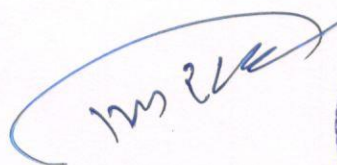
Students must be able to,

1. To develop textile design with the help of designing principles.
2. To compose textile design with different bases.
3. To ensure that students have first-hand experience of the processes involved in the planning and production of contemporary Textile outcomes.

Course Outcomes:

Student should be able to

CO1	Understand concepts, composition of designs and geometric ornamentation.
CO2	Understand elements and principles of design.
CO3	Understand various terminology and theories of colours.
CO4	Design ideas concepts and their role and application in apparel construction.


Course Content:

Section I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Design						
1.1	The elements of design. Important principles of design. Composition of design and arrangements of figures. Guidelines for fabric printing colour modification in textile fabric.	10	10	CO1	40%	40%	20%
1.2	Elements and Principles of Design :- Natural Motif, Decorative Motif, Geometric Motif, Abstract Motif, line, direction, shape, size, texture, value, colour, repetition, alternation, harmony, gradation, contrast, dominance and subordination, unity balance. Origin and basis of patterns from historic and modern fabrics. Survey of designing methods, studio and workshop techniques. Free hand sketching, enlarging and arrangement of motifs.	14	30	CO1	20%	40%	40%
Section II							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
2	Colour						
	Elements Of Colour :- Light and colour phenomenon. Physical basis of colour emissions, absorption of light. Primary, Secondary and Tertiary Colours. Complementary colours, Hues, Tints and Shades. Colours in combination and colours in contrast. Application of colour to woven fabrics.	16	20	CO3	30%	30%	40%

[Handwritten signature]

[Handwritten initials]



	Influence of fabric characteristics (weave) on appearance of colour. Chromatic circle, colour vision – Pigment theory of colour, colour wheel, etc.						
2.2	Colour Harmony and Colour Modification :- Achromatic Harmony, Monochromatic Harmony, Analogous Harmony, High Key, Low Key, Mid Key Harmony, Change in Hue, Change in Value, neutralised colour.	08	20	CO3	20%	40%	40%
	Total	48	80				

Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	Z. Grosicki	<i>Watson’s Textile Design & Colour</i>	Woodhead Publishing

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	S.Shah, R.S.Gandhi	<i>Instrumental Colour Measurements and Computer Aided Colour Matching for Textiles</i>	Mahajan Book Distributors
2	Paterson D.	<i>Textile Colour Mixing</i>	Forgotten Books

