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

(Central Technological Institute, Maharashtra State, INDIA)

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PROGRAMME NAME: DIPLOMA IN TEXTILE ENGINEERING

Programme Code	: DTE	**With Effect From Academic Year**	: 2023-24
Duration of Programme	: 6 Semester	**Duration**	: 16 Weeks
Semester	: Fourth	**Scheme**	: R-2023

Sr No	Course Title	Abbreviations	Course Type	Course Code	Total IKS Hrs for Sem.	Learning Scheme					Credits	Assessment Scheme												
						Actual Contact Hrs./Week			Self-Learning (Term Work + Assignment)	Notional Learning Hrs. /Week		Paper Duration (hrs.)	Theory					Based on LL & TL				Based on Self Learning		Total Marks
																		Practical						
						CL	TL	LL					FA-TH (MST)	SA-TH		Total		FA (CA)		SA (PR/OR)		SLA		
													Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
1	FABRIC MANUFACTURE- III	FM-III	DSC	236TE41	2	4	-	3	-	7	3.5	3	30	70	28	100	40	25	10	25#	10	-	-	150
2	TEXTILE TESTING II	TTS-II	DSC	236TE42	2	3	-	3	-	6	3	3	30	70	28	100	40	25	10	25#	10	-	-	150
3	TEXTILE CHEMISTRY-II	TC-II	DSC	236TE43	2	3	-	3	-	6	3	3	30	70	28	100	40	25	10	25#	10	-	-	150
4	KNITTING	KN	DSC	236TE44	2	4		3	-	7	3.5	3	30	70	28	100	40	25	10	25#	10	-	-	150
5	APPAREL MERCHANDISING	AM	DSC	236TE45	2	3	-	-	1	4	2	3	30	70	28	100	40	-	-	-	-	25	10	125
6	ELEMENTS OF MECHANICAL AND ELECTRICAL ENGINEERING	M&E	DSC	236M&E46	-	2	-	-	1	3	1.5	-	-	-		-	-	50	20	-	-	25	10	75
7	TECHNICAL SKILLS	TS	SEC	236TE47	-	-	-	2	1	3	1.5	-	-	-		-	-	25	10	-	-	25	10	50
8	ENVIRONMENT STUDIES AND SUSTAINABILITY	ESS	SEC	236TE48	-	-	-	2	2	4	2	-						25	10	-	-	25	10	50
Total					**10**	**19**	**-**	**16**	**05**	**40**	**20**	**-**	**150**	**350**	**140**	**500**		**200**		**100**		**100**		**900**

Abbreviations : CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment, SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends : @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Course Category : Discipline Specific Course Core (DSC) : 4, Discipline Specific Elective (DSE) : 0, Value Education Course (VEC) : 1, Intern./Apprenti./Project./Community (INP) : 0, Ability Enhancement Course (AEC) : 1, Skill Enhancement Course (SEC) : 2, Generic Elective (GE) : 0

Curriculum Coordinator

Head Diploma in Textile Engineering

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP. EXAM MATUNGA MUMBAI-19

Dean - Diploma

DIPLOMA PROGRAMME	: DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	: DTE
SEMESTER	: FOURTH
COURSE TITLE	: ENVIRONMENT STUDIES AND SUSTAINABILITY
COURSE CODE	: 236TE48

I.TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self-learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
-	-	2	2	2	-	-	-	-	-	-	25	10	-	-	25	10	50

Total IKS Hrs for Semester : 0 Hrs

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment, SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# Online Examination , @$ Internal Online Examination

Course Category: Discipline Specific Course Core (DSC) : 3, Discipline Specific Elective (DSE) : 0, Value Education Course (VEC) : 1, Intern/Apprentice/Project/Community (INP) : 0, Ability Enhancement Course (AEC) : 2, Skill Enhancement Course (SEC) : 2, Generic Elective (GE) : 0

II. Course Objectives: At the end of this course students will be able to

- Know multidisciplinary nature of environmental studies.
- Know various types of environmental pollution, its causes, effects & control measures.
- Know about solid wastes management.
- Know social issues such as human population, human rights & health.
- Know about the importance of environmental studies in textile manufacturing.

III. COURSE OUTCOMES (COS)

Students will be able to achieve the following COS on completion of course based learning

CO1	Develop Public awareness about environment.
CO2	Suggest alternative energy resources for textile industry.
CO3	Observe techniques to control pollution
CO4	Apply methods for solid waste management in textile field
CO5	Understand the concept of environmental social governance and environmental sustaiablility.
CO6	Compare up-cycling and recycling in Textile Engineering.

IV. LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COS
1.	Sustainable practices in dyeing.	2	CO1
2.	Textile applications for renewable energy.	2	CO2
3.	Energy audit of a textile company.	2	CO2
4.	Use of textiles to reduced pollution	2	CO3
5.	Textile waste management	2	CO4
6.	Implementation of Environmental Social Governance for sustainability.	2	CO5
7.	Report on Life cycle analysis of Textile products.	2	CO5
8.	Up-cycling and recycling of textile post-consumer waste.	2	CO6
9.	Recycling of PET bottles.	2	CO6
10.	Recycling and disposal of technical textiles.	2	CO6
11.	Recycling of sustainable fibres.	2	CO6

V. SLA

- Students in a group of 5 to 7 shall give seminar on environmental related issues in textile industry.
- Visit to sustainable textile product manufacturing organization.

VI. ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Tutorials
- Self-learning
- Term Work
- Seminar/Presentation

Summative Assessment (Assessment of Learning)

- End Term Exam
- Tutorial Performance

VII. I.SUGGESTED COS-POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2
CO1	3	-	-	-	3	-	3	-	-
CO2	3	-	-	-	3	-	3	-	-
CO3	3	-	-	-	3	-	3	-	-
CO4	3	-	-	-	3	-	3	-	-
CO5	3	-	-		3		3		
CO6	3	-	-	-	3	-	3	-	-

Legends :- High:03, Medium:02,Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the textile industry.

PSO2: Understand the impact of textile processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

IX. SUGGESTED LEARNING MATERIALS TEXTBOOKS/WEBSITES:

Sr. No	Author	Title	Publisher
1	Michael Allaby	Basic environmental sciences	Routledge publication, 2nd edition, 2000, ISBN: 0-415-21176-X

2	Erach Bharucha	Environmental studies	University Grants Commission, New Delhi
3	Rajagopalan	Environmental studies	3rd edition, Oxford University press, USA, ISBN: 9780199459759, 0199459754
4	Shashi Chawla	A text book of environmental studies	Tata Mc Graw - Hill New Delhi
5	Keith Slater	Environmental Impacts of Textiles: Production, Processes and Protection	Wood Head Publishing Series in Textiles, 1st Edition, 2003
6	Subramanian Senthilkannan Muthu	Sustainability in the Textile Industry	Springer Publication, 2017

Curriculum Coordinator

Head of Department

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP. EXAM MATUNGA MUMBAI-19

Dean Diploma

BOS VJTI Approval Dt. 10/07/2024

DIPLOMA PROGRAMME	: DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	: DTE
SEMESTER	: FOURTH
COURSE TITLE	: FABRIC MANUFACTURE III
COURSE CODE	: 236TE41

1.TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self - learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
4	-	3	-	3.5	3	30	70	28	100	40	25	10	25#	10	-	-	150

Total IKS Hrs for Sem. : 2 Hrs

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment, SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# Online Examination , @$ Internal Online Examination

Course Category: Discipline Specific Course Core (DSC) : 3, Discipline Specific Elective (DSE) : 0, Value Education Course (VEC) : 1, Intern/Apprentice/Project/Community (INP) : 0, Ability Enhancement Course (AEC) : 2, Skill Enhancement Course (SEC) : 2, Generic Elective (GE) : 0

II.RATIONALE

Power looms are not the solution, engineering and technological changes have brought about automation in weaving looms to increase production rates, different designs and quality of fabrics. This course imparts knowledge and skills to the diploma students in automatic looms and dobby, jacquard and drop box devices.

Students should have the knowledge of modern developments, automation and new methods of fabric forming. Majority of the developments are taking place on the shuttle less looms. Due to this technological change basic need of industries also changes. To fulfill the industries requirement of

highly skilled technicians in modern weaving area, this course has been designed. It is therefore an important course for textile engineers.

III.COURSE OUTCOMES (COs)

Students will be able to achieve the following COs on completion of course based learning

- CO1 – Apply principles of various mechanism of automatic looms
- CO2 – Understand construction working and settings of different mechanisms on automatic looms
- CO3 - Define and describe the term Weft Insertion rate, weft velocity, weft accumulator and selvedges
- CO4 – Understand and describe the principle, types and different motions on unconventional weaving loom.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION – I								
Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
1		**Automatic looms**	8	10	CO1	40%	40%	20%
	1.1	Classification of looms – Automatic looms and Non-automatic looms, Types of automatic looms – Cop changing looms and shuttle changing looms, Salient features and requirements advantages of automatic looms. Compare cop changing over shuttle changing mechanism.						
	1.2	Centre Weft fork mechanism: Principle, working and construction						
2		**Motions on Automatic looms**	24	25	CO2	40%	40%	20%
	2.1	Types of feelers – Mechanical, Electrical, Optical and Electronics type, Working and construction of Mechanical, Electrical, Optical and Electronics feelers.						
	2.2	Automatic weft replenishment -Pirn changing, mechanisms – Northrob, Ruti. Pirn changing mechanism on automatic loom its construction and working,						
	2.3	Automatic Let- off motion- Working, construction of Bartlett, Ruti, Roper, Semi- positive let-off motion its working and construction.						

	2.4	Study of different types of warp stop motion, its working and construction – Mechanical and Electrical warp stop motion. Northrob warp stop motion, its working, construction and setting. Optical/Laser warp stop motion						
SECTION – II								
Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
3		**Unconventional weaving preparatory requirements**	8	8	CO3	40%	40%	20%
	3.1	Preparatory weaving required for this machines, Quality of yarn.						
	3.2	Introduction, weft velocity, Weft speed, Weft velocity curves, Weft storage units – types, necessity. Selvedges – Basic function, requirement of selvedges, Classification of selvedge						
4		**Unconventional weaving**	24	27	CO4	40%	40%	20%
	4.1	**Projectile loom:** Principle of weft insertion, projectile preparation for picking, picking mechanism, Drive to the projectile (Motor drive) sequence of weft insertion, Motion of sley. Calculations related to torsion rod picking mechanism. Modern features of projectile loom.						
	4.2	**Rapier loom:** Principles of weft insertion, sequence of weft insertion, classification, Positive rapier and Negative rapier,Tip to tip and loop transfer, Rapier drives. Modern features of rapier loom. Calculations related to rapier loom.						
	4.3	**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.						
	4.4	**Water Jet Looms:** Nozzles, principle, sequence of weft insertion, Quality of water for water jet looms. Modern features of waterjet loom.						

	4.5	**Multiphase weaving:** Principles of weft insertion, sequence of weft insertion in multiphase looms, circular weaving.						

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

I.

V.LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COs
1	Loom Erection – dismantling of various parts & motion.	3	CO1
2	Loom Erection – Assembly of various parts.	3	**CO1**
3	Loom Erection – Tuning of various motion, running the loom with shuttle but without warp.	3	**CO1**
4	Loom Erection – Beam gaiting on loom, Weaving of fabric.	3	**CO1**
5	Observe the principle, working, construction of Airjet loom.	3	**CO4**
6	Observe the principle, working, construction of Rapier loom.	3	**CO4**
7	Observe the pirn changing mechanism.	3	**CO2**
8	Observe the working of Roper Let-off motions.	3	**CO2**
9	Observe the working of Barlett Let-off motion.	3	CO2
10	Observe the working of Ruti Let-off motion.	3	**CO2**
11	Observe the Mechanical and Electrical Warp stop motions.	3	**CO2**
12	Observe the types of weft feelers used on automatic loom.	3	**CO1**
13	Observe and perform settings of Centre Weft fork motion.	3	**CO1**

VI.ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Tutorials
- Midterm Test Exam
- Self-learning
- Term Work
- Seminar/Presentation

Summative Assessment (Assessment of Learning)

- End Term Exam
- Tutorial Performance

VII. SUGGESTED COS-POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes * (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	3	1	2	1	1	-	2	3	1
CO2	3	1	2	1	1	-	2	3	1
CO3	3	2	3	1	-	2	2	3	-
CO4	3	2	3	1	1	2	3	3	-

Legends :- High:03, Medium:02, Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the textile industry.

PSO2: Understand the impact of textile processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

VIII. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFERENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	Talukdar, Sriramulu and Ajgaonkar	Weaving- Mechanism and Management	Mahajan Publishers Pvt. Ltd., Ahmedabad,1998
2	R. Marks, A. T. C. Robinson	Principles of weaving	The Textile Institute, Manchester
3	P. R. Lord and M. H. Mohamed	Weaving : Conversion of yarn to fabric	Merrow publishing Co. Ltd., England, 2nd edition, 1988
4	P. K. Banerjee	Principles of fabric formation	CRC Press, 2014

IX. LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	http://nptel.ac.in/course.php	

Curriculum Coordinator Head of the Department Dean Diploma

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE
DIP. EXAM
MATUNGA
MUMBAI-19

DIPLOMA PROGRAMME	: DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	: DTE
SEMESTER	: FOURTH
COURSE TITLE	: TEXTILE TESTING-II
COURSE CODE	: 236TE42

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self-learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
3	-	3	-	6	3	30	70	28	100	40	25	10	25#	10	-	-	150

Total IKS Hrs for Sem. : Hrs

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment, SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning AssessmentLegends: @ Internal Assessment, # External Assessment, *# Online Examination, @$ Internal Online ExaminationCourse Category: Discipline Specific Course Core (DSC): 3, Discipline Specific Elective (DSE): 0, Value Education Course (VEC): 1, Intern/Apprentice/Project/Community (INP): 0, Ability Enhancement Course (AEC): 2, Skill Enhancement Course (SEC): 2, Generic Elective (GE): 0

II.COURSE OUTCOMES (COs)

Students will be able to achieve the following COs on completion of course based learning

- CO1 – Understand the various parameters for evaluation of fabric properties
- CO2 Understand the properties relationship between fabric structure and properties like porosity, air permeability.
- CO3 - Understand the fabric serviceability properties like abrasion, pilling, wrinkle etc.
- CO4 – Understand the fabric mechanical properties.
- CO5 – Understand the fabric chemical properties.
- CO6 – Understand the fabric water repellency, flame retardancy.

III.COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I								
Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
1		Testing of fabrics: Fabric dimensions & properties need for fabric testing different methods.	6	15	CO1	40%	40%	20%
	1.1	Measurement of fabric dimensions. Fabric wt/unit area, wt/unit-length, threads per unit length in woven fabric.						
	1.2	Crimp of yarn in fabrics, its measurements and effect of crimp control on fabric properties.						
	1.3	measurements Cloth cover and Cloth Cover factor.						
2		Fabric porosity and air-permeability.	08	10	CO2	40%	40%	20%
	2.1	Relationship between fabric porosity and air permeability.						
	2.2	Air, water and water vapour transmission through fabric, thermal resistance of fabric.						
3		Serviceability testing parameters	10	10	CO3	40%	40%	20%
	3.1	Abrasion resistance, and as pilling, crease and wrinkle recovery,						
	3.2	Fabric handle, assessment of barre and other form of fabric defects.						

SECTION - II								
Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
4		Fabric mechanical properties like, tensile strength, tearing strength and bursting strength testing.	06	10	CO4	40%	40%	20%
	4.1	Tensile strength,						
	4.2	Tearing strength						
	4.3	Bursting strength testing						
5		Chemical Testing of Textiles: Colour fastness, Rubbing fastness, Laundering fastness	08	15	CO5	40%	40%	20%

	5.1	Colour fastness						
	5.2	Rubbing fastness						
	5.3	Laundering fastness						
6		Fabric wettability, Water repellency, Waterproof testing, Fabric Flammability, testing of flame retardancy	10	10	CO6	40%	60%	-
	6.1	Fabric wettability, Water repellency and waterproof testing						
	6.2	Fabric Flammability, testing of flame retardancy						
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms's Revised Taxanomy).								

IV.LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COs
1	**To test air permeability property of fabric.**	**03**	**2**
2	**To test water permeability property of fabric**	**03**	**6**
3	**To test thermal insulation property of fabric**	**03**	**2**
4	**To test drap ability of fabric**	**03**	**3**
5	**To test fabric thickness**	**03**	**1**
6	**To test abrasion resistance property of fabric.**	**03**	**3**
7	**To test pilling propensity of fabric**	**03**	**3**
8	**To test flammability of fabric**	**03**	**6**
9	**To test tear resistance of fabric**	**03**	**4**
10	**To test tensile strength of fabric**	**03**	**4**
11	**To test bursting strength of fabric**	**03**	**4**

V. ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Tutorials
- Midterm Test Exam
- Self-learning
- Term Work
- Seminar/Presentation

Summative Assessment (Assessment of Learning)

- End Term Exam
- Tutorial Performance

VI. SUGGESTED COS-POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes * (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	3	-	1	2	2	1	3	1	3
CO2	1	3	1	2	1	1	2	1	1
CO3	2	-	2	2	1	1	2	1	2
CO4	2	2	2	2	2	-	3	1	2
CO5	2	3	2	1	2	-	3	1	2
CO6	2	2	-	2	-	2	3	1	2

Legends :- High:03, Medium:02, Low:01, No Mapping: -
PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the textile industry.
PSO2: Understand the impact of textile processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

VII.SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFERENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	B. P. Saville, 1999,	1. Physical Testing of Textiles	Woodhead Publishing Ltd.,U. K.
2	J. E. Booth,	Principles of Textile Testing	1961, Heywood Books, London.
3	Edited by V. K. Kothari,	Testing and Quality Management –	IAFL Publications, New Delhi, 2005
4	P. Angappan, R. Gopalakrishnan	Textile Testing	S.S.M.I.T.T. Staff and studen' Co-op Stores Ltd.s
5	E. B. Grover and D. S. Hamby, 1960.	Suggested Reading: Handbook of Textile Testing and Quality Control	

VIII. LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://archive.nptel.ac.in/courses/116/102/116102029/	

Curriculum Coordinator | Head of the Department | Dean Diploma

BOS VJTI Approval Dt. 10/07/2024

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE
DIP. EXAM
MATUNGA
MUMBAI-19

DIPLOMA PROGRAMME	: DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	: DTE
SEMESTER	: FOURTH
COURSE TITLE	:TEXTILE CHEMISTRY- II
COURSE CODE	: 236TE43

I.TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self - learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
3	-	3	-	3	3	30	70	28	100	40	25	10	25#	10	-	-	150

Total IKS Hrs for Sem.: 2 Hrs

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment, SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# Online Examination, @$ Internal Online Examination

Course Category: Discipline Specific Course Core (DSC) : 3, Discipline Specific Elective (DSE) : 0, Value Education Course (VEC) : 1, Intern/Apprentice/Project/Community (INP) : 0, Ability Enhancement Course (AEC) : 2, Skill Enhancement Course (SEC) : 2, Generic Elective (GE) : 0

II. COURSE OBJECTIVES:

Students must be able to,

1) Basic understanding of ready for dyeing RFD concept.

2) Introduction and study of dyeing, printing and finishing.

3) Conceptual understanding of dyeing of natural as well as synthetic fibre.

4) study of different types of printing and finishing.

5) study of different machineries used for dyeing and printing

6) Study of finishes and value addition

III. COURSE OUTCOMES (COs)

Students will be able to achieve the following COs on completion of course based learning

CO1	Acquire basic knowledge about RFD and Dyes
CO2	Select the different dyes used for different fibre
CO3	Understand the finishing and printing concept
CO4	Know the different styles and machinery used in printing and finishing
CO5	Understand the basic value addition garment finishing
CO6	Estimate testing various fastness

IV.COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION-I								
Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1		**Introduction of dyes**	4	8	CO1	30%	40%	30%
	1.1	Ready for dyeing concept, Classification of Dyes, Difference between dyes and pigments, Terminology related to dyeing						
	1.2	Principles of dyeing cotton,wool, silk, nylon, polyester, acrylic						
2		**Dyeing of fibre**	12	16	CO2	30%	30%	40%
	2.1	Dyeing of natural fibres like cotton with direct, reactive, vat, sulphur, Principles of dyeing wool/silk with acid, wool with acid, basic, metal complex and acid mordant dyes						
	2.2	Principle of dyeing synthetic fibre Polyester with dispersed dyes with carrier and HTHP method Nylon with acid dyes and acrylic with basic dyes. Auxiliaries and its uses in dyeing						
	2.3	Different types of machinery used in dyeing						
3		**Printing**	8	11	CO3	30%	30%	40%

	3.1	Different methods of printing, Styles of printing, Ingredients of a printing paste, Importance of each ingredient, Direct style of printing with direct and reactive dyes. Printing of synthetics with disperse dyes,						
	3.2	Pigment printing: Machines –Flat bed, Rotary Screen printing machines, Transfer printing, Digital printing						
SECTION-II								
Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
4		**Finishing**	**8**	**10**	**CO4**	**20%**	**40%**	**40%**
	4.1	Classification of finishes, Mechanical Finishes- Calendering Sanforising, Decatizing Stenter M/C: Chemical Finish-starching, water repellency, flame retardancy, waterproofing, crease recovery, dimensional stability (Principle, Working, Chemicals)						
5		**Garment finishing**	7	9	CO5	20%	30%	50%
	5.1	A brief outline of garment finishing. Different chemicals are used and garment finishing machines.						
	5.2	Enzyme washing (Bio-washing) of garments						
6		**Testing**	**7**	**12**	**CO6**	**20%**	**40%**	**40%**
	6.1	Testing of colour fastness of dyed and printed goods (Washing, Rubbing, Perspiration, Sublimation, Shrinkage)						
	6.2	Finishing efficiency of different finishes.	**2**	**4**	**CO6**	**20%**	**40%**	**40%**
			48	**70**				

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

V. LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment	Approx. Hours	CO
1	Dyeing of cotton with Direct dye and after treatments	3	CO7
2	Dyeing of cotton with cold brand reactive colours	3	CO7 & CO8
3	Dyeing of cotton with a hot brand reactive colours	3	CO7 & CO8
4	Dyeing of cotton with vat dye	3	CO7
5	Dyeing of cotton with sulphur dye.	3	CO7 & CO8
6	Dyeing of wool, and silk with acid dye	3	CO7
7	Dyeing of polyester with dispersed dye carrier method	3	CO7 & CO8
8	Dyeing of nylon with acid dyes	3	CO8
9	Dyeing of acrylic with basic dyes	3	CO7 & CO8
10	Testing of washing fastness, rubbing fastness	3	CO7

VI. ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Tutorials
- Midterm Test Exam
- Self-learning
- Term Work
- Seminar/Presentation

Summative Assessment (Assessment of Learning)

- End Term Exam
- Tutorial Performance

VII. SUGGESTED COS-POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes * (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	3	1	2	1	2	1	1	2	2
CO2	3	2	1	1	1	1	1	3	2
CO3	3	2	2	1	1	1	1	3	1
CO4	2	2	3	3	2	1	1	2	1
CO5	2	3	3	2	2	1	1	3	2
CO6	2	3	2	1	1	1	1	1	1

Legends :- High:03, Medium:02, Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the textile industry.

PSO2: Understand the impact of textile processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

VIII. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFERENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	Dr. V.A.Shenai	Technology of dyeing	Sevak Publications, Mumbai, 1 edition, 1984
2	Dr. V.A.Shenai	Technology of finishing	Sevak Publications, Mumbai, 1 edition, 1990
3	Dr. V.A.Shenai	Technology of finishing	Sevak Publications, Mumbai, 2 edition, 1990
4	Dr.V.A.Shenai,	Chemistry of fibres	Sevak Publications, Mumbai, 1 edition, 1971
5	Dr. V.A. Shenai	Introduction to Textile finishing	J.T. Marsh, Chapmann and Hall, 1 edition, 1984
6	Dr. V.A. Shenai	Principles and experimental dyeing	Sevak Publications, Mumbai, 1 edition, 1993

IX. LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1		
2		

Curriculum Coordinator

Head of the Department

Dean Diploma

BOS VJTI Approval Dt. 10/07/2024

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE
DIP. EXAM
MATUNGA
MUMBAI-19

DIPLOMA PROGRAMME	: DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	: DTE
SEMESTER	: FOURTH
COURSE TITLE	: KNITTING
COURSE CODE	: 236TE44

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self - learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
4	-	3	-	3.5	3	30	70	28	100	40	25	10	25	10	-	-	150

Total IKS Hrs for Sem. : 0 Hrs

Abbreviations: CL- Classroom Learning, TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment, SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# Online Examination, @$ Internal Online Examination

Course Category: Discipline Specific Course Core (DSC) : 3, Discipline Specific Elective (DSE) : 0, Value Education Course (VEC) : 1, Intern/Apprentice/Project/Community (INP) : 0, Ability Enhancement Course (AEC) : 2, Skill Enhancement Course (SEC) : 2, Generic Elective (GE) : 0

II. RATIONALE

Knitting is one of the fabric manufacturing technology. Knitted fabrics possess unique features of stretchability and find wide use for under garments, sports uniforms, summer and winter dresses etc. to a large extent. This sector is now diversifying from apparel to technical textiles. Over the past few years, the use of readymade fashioned knitted garments has increased due to quality, cost and comfort properties. Therefore inclusion of knowledge for manufacturing of knitted fabrics and the machines used for manufacturing in the curriculum plays a significant role. Knowledge of this subject will help the students to start their small scale industrial unit for

self-employment and contribute to development of new knitted products for technical applications.

III. COURSE OUTCOMES (COs)

Students will be able to achieve the following COs on completion of course based learning

- CO1 – Use the weft knitting machines to create different weft knitted structures
- CO2 – Use the warp knitting machines to create different warp knitted structures
- CO3 – Evaluate the defects and production of warp and weft knitting machines
- CO4 – Analyse the knitted fabrics to find the fabric parameters.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I								
Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
1		Basics of Weft Knitting	04	06				
	1.1	Fabric forming methods	04	01	CO1	40%	40%	20%
	1.2	Comparison of weaving and knitting process, structure and properties of fabric and applications	01	02	CO1	30%	30%	40%
	1.3	Definition and knitting terms - Knitting, weft knitting, warp knitting, courses, wales, face loop, back or reverse loop, needle loop, sinker loop, technical face, technical back, stitch density, stitch length, course length,	02	02	CO1	50%	30%	20%
	1.4	Classification of weft knitting machine	01	01	CO1	50%	40%	10%
2		Weft Knitting Machines	12	14	CO1			
	2.1	Zones of knitting machine: Creel zone, Knitting zone and Take up zone	02	04	CO1	40%	60%	-
	2.2	Single jersey circular knitting machine	06	03	CO1	40%	60%	-
	2.3	Double jersey (Rib, Interlock and Purl): Cam, needle arrangement of cylinder and dial and knitting cycle.	02	03	CO1	40%	60%	-
	2.4	Flat knitting machine: Passage of yarn, knitting elements and knitting cycle.	02	04	CO1	40%	60%	-
3		Weft Knit Structures	12	14	CO1	40%	40%	20%

	3.1	Single Jersey structure – Loop diagram, graphical representation and fabric properties Derivatives of single jersey: Loop diagram needle order and cam order of La-coste, Cross tuck, Satin	04	04	CO1	20%	40%	40%
	3.2	Rib structure- Rib gaiting, 1 x 1 rib, and 2 x 2 rib structure, loop diagram, graphical representation and fabric characteristics Derivatives of rib structure- Loop diagram of Milano rib, French pique,	03	04	CO1	20%	40%	40%
	3.3	Interlock structure – Interlock gaiting, loop diagram, graphical representation and fabric characteristics Derivatives of interlock structure- Loop diagram of Single pique, Swiss pique, Punte-de-roma, Ottoman rib	03	04	CO1	20%	40%	40%
	3.4	Purl structure – Diagram, graphical representation and diagrammatic representation, fabric characteristics	02	02	CO1	20%	40%	40%
4		Defects and Calculations	04	06	CO3			
	4.1	Weft knit fabric defects	02	02	CO3	40%	40%	20%
	4.2	Weft knitting calculations : Production and fabric weight	02	04	CO3	20%	40%	40%

SECTION - II

Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
5		Basics of Warp Knitting	04	06	CO2			
	5.1	Warp knitting terms and their definition - Underlap, overlap, open lap, closed lap	02	02	CO2	40%	40%	20%
	5.2	Comparison of weft knitting and warp knitting	01	02	CO2	40%	40%	20%
	5.3	Classification of warp knitting machines	01	02	CO2	40%	40%	20%
6		Warp Knitting Machines	**12**	**14**	CO2			
	6.1	Tricot knitting machine – Knitting elements and their function, Passage of yarn, Knitting cycle	05	06	CO2	40%	60%	-
	6.2	Raschel knitting machine - Knitting elements and their function, Passage of yarn, Knitting cycle	05	06	CO2	40%	60%	-

	6.3	Comparison between Tricot and Raschel knitting machine	02	02	CO2	40%	60%	-
7		Warp Knit Structures	12	14	CO2			
	7.1	Representation of warp knit structure: Lapping diagram, lapping notation, Patterning mechanism, Chain links – Types and their arrangement	04	05	CO2	20%	40%	40%
	7.2	Single bar structures: Lapping diagram of Pillar stitch (open loop and closed loop), Tricot lap (open and closed loop), 2 x 1 lapping, 3 x 1 lapping, 4 x 1 lapping (open and closed), atlas lap (open and closed).	04	05	CO2	20%	40%	40%
	7.3	Double bar structure – Lapping diagram of Full tricot, Locknit, Reverse locknit, Satin, Queen's cord, Sharkskin	04	04	CO2	20%	40%	40%
s								
8		Defects and Calculations	04	06	CO3			
	8.1	Common warp knit fabric defects causes and remedies	02	02	CO3	40%	40%	20%
	8.2	Warp knitting calculations: Production and fabric weight	02	04	CO3	20%	40%	40%
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms's Revised Taxanomy).								

V. LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COs
1	Identification and comparison of knitted and woven fabric.	03	CO4
2	Study of knitting cycle on single jersey knitting machine.	03	CO4
3	Study of cam arrangement on Flat knitting machine.	03	CO4
4	Demonstrate principle stitches used in weft knitting	03	CO4
5	Analysis of Single jersey knitted fabric	03	CO4
6	Analysis of Rib knitted fabric	03	CO4
7	Identification and comparison of weft knitted with warp knitted samples	03	CO4
8	Analysis of warp knitted structure		

VI. ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Tutorials
- Midterm Test Exam
- Self-learning
- Term Work
- Seminar/Presentation

Summative Assessment (Assessment of Learning)

- End Term Exam
- Tutorial Performance

VII. SUGGESTED COS-POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes * (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	3	2	3	2	1	-	2	3	1
CO2	3	2	3	2	1	-	2	3	1
CO3	3	3	3	2	2	1	2	2	2
CO4	3	3	2	1	1	2	3	2	2

Legends :- High:03, Medium:02, Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the textile industry.

PSO2: Understand the impact of textile processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

VIII.SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFERENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	David J. Spencer	Knitting Technology	Wood head publishing, ISBN 978-1-85573-333-6.

2	Ambumani N	Knitting Fundamentals, Machines, Structures and Developments	New Age International Private Ltd. ISBN 978-8-12241-954-2.
3	Prof. D B Ajgaonkar	Knitting Technology	Universal Publication Corporation ISBN 978-8-18502-734-0
4	D F Paling	Warp Knitting Technology	Columbine Press Ltd. ISBN 978-0-90029-802-8
5	Dr. S. Raz	Warp Knitting Production	Melliand Textilberichte, 1987 ISBN : 9783875290226
6	A. Reisfeld	Warp Knit Engineering	National Knitted Outerwear Association, New York

VIII. LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://nptel.ac.in/courses/116102056	NPTEL course on 'Science and Technology of Weft and Warp Knitting'

Curriculum Coordinator

Head of the Department

Dean Diploma

BOS VJTI Approval Dt. 10/07/2024

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE
DIP. EXAM
MATUNGA
MUMBAI-19

DIPLOMA PROGRAMME	: DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	: DTE
SEMESTER	: FOURTH
COURSE TITLE	: APPAREL MERCHANDISING
COURSE CODE	:236TE45

I.TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self-learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
3	-	-	1	2	3	3	30	70	100	40	-	-	-	-	25	10	125

Total IKS Hrs for Sem. : 0 Hrs

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment,SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# Online Examination , @$ Internal Online Examination

Course Category: Discipline Specific Course Core (DSC) : 3, Discipline Specific Elective (DSE) : 0, Value Education Course (VEC) : 1, Intern/Apprentice/Project/Community (INP) : 0, AbilityEnhancement Course (AEC) : 2, Skill Enhancement Course (SEC) : 2, Generic Elective (GE) : 0

II.RATIONALE

Merchandising is a specialized management function within the fashion industry. It is the business that moves the world fashion from designers showroom to retail sales floor and in to the hands of consumers. It is the internal planning that takes place within a retail organization in

order to ensure adequate amount of merchandise are on hand to be sold at prices that the consumers are willing to pay for a profitable operation.

III. COURSE OUTCOMES (COs)

Students will be able to achieve the following COs on completion of course based learning

CO1 –Define merchandising. Understand the categories and process flow chart for merchandising.

CO2 – Explain the principles of merchandising and Demonstrate the detail process of apparel export merchandising

CO3 - Describe Apparel Fashion Merchandising process.

CO4 –Describe Commerial and domestic export

CO5– Describe the shipment and logistic in export merchandising

CO6- Describe the Visual Merchandising process.

CO7-Understand the apparel Merchandising Process and its scope in India.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION – I								
Unit & Sub-Unit		**Topics/Subtopics**	**Hours**	**Marks**	**COs**	**R Level**	**U Level**	**A Level**
1		**Merchandising**	08	10	CO1	40%	40%	20%
	1.1	IKS- History of Merchandising						
	1.2	Role of Merchandising in the Apparel Industry-Definition and scope, Responsibilities of a merchandiser, Importance in product development and sales						
	1.3	Categories of Apparel Merchandising, Process flow of Apparel Merchandising						
2		**Apparel Export Merchandising**	08	13	CO2	40%	40%	20%
	2.1	Overview of Apparel Export Merchandising, Export market analysis and selection, Export pricing strategies, Trade regulations and compliance in Apparel export						

	2.2	Process flow – Buying ,sourcing and inventory planning, Pre-costing and reply, Order confirm, Master Planning Scheduling Programming Samples and its types, Accessories sourcing and purchase, Inspection, Testing, Cutting, Approvals.						
3		**Apparel fashion merchandising**	08	12	CO3	40%	40%	20%
	3.1	Concept of fashion Merchandising, Principles of fashion, Fashion cycle leadership theories,						
	3.2	Organisation for fashion merchandising, Apparel fashion merchandising process, Fashion forecasting Fashion shows.						
	3.3	Branding, Process of Brand development						

SECTION – II

Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
4		**Shipment,Logistics and Export Documentation**	10	14	CO4	40%	40%	20%
	4.1	Shipment planning and scheduling Transportation modes in apparel shipment, Customs clearance procedures, Risk management in international logistics, Document negotiation process,						
	4.2	Order confirmation, various types of export documents, pre shipment , post shipment documents, Terms of sale, payment, shipment etc. Export incentives, duty drawbacks, License exchange control regulations, foreign exchange regulations acts, Export management risks, export finance, WTO, GATT/MFA functions and objectives, success and failures						
5		**Visual Merchandising**	6	8	CO5	40%	40%	20%
	5.1	Introduction ,Function and types of of visual merchandising						

	5.2	Elements and technique of visual merchandising, Merchendising fixtures and sinage						
6		**Apparel Retail Merchandising**	8	13	CO6	40%	40%	20%
	6.1	Retail buying process for apparel products, Assortment planning and inventory management,Pricing strategies and promotions,Customer engagement and sales techniques in apparel retail						
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms's Revised Taxanomy).								

V. LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COs
1	Key responisibilities of Merchandising in fashion retail environment	2	CO1
2	Methods to analyse fashion forecast trends	2	CO2
3	Digital Marketing	2	CO3
4	Visual Merchandising	2	CO5
5	International Merchandising – Challenges and Opportunities	2	CO3
6	Merchandising strategies for International Marketing	2	CO2
7	Factors influencing consumer purchasing decisions in the fashion industry	2	CO3
8	Impact of globalization on the apparel industry, including sourcing and marketing strategies	2	CO6
9	Report on shirt merchandising	2	CO7
10	Learning the sampling process	2	CO2

VI. ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Tutorials
- Midterm Test Exam
- Self-learning
- Term Work
- Seminar/Presentation

Summative Assessment (Assessment of Learning)

- End Term Exam
- Tutorial Performance

VII. SUGGESTED COS-POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO-2
CO1	3	1	1	1	-	2	2	2	2
CO2	2	2	2	1	1	2	1	2	2
CO3	3	2	2	1	1	2	2	2	2
CO4	1	-	-	-	1	2	3	2	2
CO5	1	1	1	3	-	2	3	2	2
CO6	2	2	1		-	2	2	2	2

Legends :- High:03, Medium:02,Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the textile industry.

PSO2: Understand the impact of textile processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

VIII. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFERENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	M. Krishnakumar	Apparel Merchandising- An Intgrated Approach	Abhishek Publications, Chandigarh, First Edition, 2010.
2	Jeremy A. Rosenau, David L. Wilson	Apparel Merchandising: The Line Starts Here Hardcover – 2006	Fairchild Books, 2nd Revised Edition, 2006
3	Martin M Pegler	Apparel Merchandising: The Line Starts Here Hardcover – 2006	Fairchild Publications, 6th Edition, 2011
4	Leslie Davis Burns, Nancy O Bryant	The Business of Fashion: Designing, Manufacturing, and Marketing	Fairchild Publications, 2002

5	Beverly Kemp-Gatterson, Barbara L Stewart	Apparel: Concepts and Practical Applications	Fairchild Publications, 1st Edition, 2008

IX. LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://www.bloomsbury.com/us/fashion-retailing-9782940496235/	Fashion retailing
2	https://www.bloomsbury.com/us/fashion-retailing-9782940496235/	Fashion retailing

Curriculum Coordinator | Head of the Department | Dean Diploma

BOS VJTI Approval Dt. 10/07/2024

DIPLOMA PROGRAMME	: DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	: DTE
SEMESTER	: FOURTH
COURSE TITLE	: ELEMENTS OF MECHANICAL AND ELECTRICAL ENGINEERING
COURSE CODE	: 236M&E46

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self-learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
2	-	-	2	2	-	-	-	-	-	-	50	20	-	-	25	10	75

Total IKS Hrs for Sem.: 0 Hrs

Abbreviations: CL- Classroom Learning, TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment, SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# Online Examination, @$ Internal Online Examination

Course Category: Discipline Specific Course Core (DSC): 3, Discipline Specific Elective (DSE) : 0, Value Education Course (VEC) : 1, Intern/Apprentice/Project/Community (INP) : 0, Ability Enhancement Course (AEC) : 2, Skill Enhancement Course (SEC) : 2, Generic Elective (GE) : 0

II. COURSE OBJECTIVE:

The modern Textile mill is fully automated and different types of motors, pumps, boilers and other types of electronic as well as mechanical devices are used. A student should have a good background in electrical electronics and mechanical engineering. This subject also deals with the various mechanical system requirements of textile mills.

III. COURSE OUTCOMES (COs)

Students will be able to achieve the following COs on completion of course based learning

- CO1 – Identify the different electrical & electronic devices used in textile mills
- CO2 – Know the working of various electrical & electronic devices in textile industry
- CO3 - Identify different mechanical devices used in textile mills
- CO4 –Know the working of various mechanical devices in textile industry

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

Unit & Sub-Unit		Topics/Subtopics	Hours	Cos
1		**AC Fundamentals**	6	CO1
	1.1	Terms related to single phase and three phase supply		
	1.2	Definition of A.C. quantities		
	1.3	Serial and parallel A.C. circuits		
2		**DC Machines**	6	CO2
	2.1	Introduction to D.C. Machines		
	2.2	DC generator---Construction, working principle		
	2.3	D.C. Motors- Construction, working principle		
	2.4	Classification and applications for textile.		
3		**Electrical Measurement**	4	CO2
	3.1	Measurement of current, voltage		
	3.2	Measurement of power & energy in ac circuit		
4		**Steam Boilers**	5	CO3
	4.1	Introduction & classification		
	4.2	Smoke tube boiler & water tube boiler, & their comparison		
	4.3	Boiler mountings & accessories		
	4.4	Performance of boilers & its application in textile industry		
5		**Air Compressors**	5	CO3
	5.1	Introduction & types of air compressors		
	5.2	Reciprocating & rotary air compressors, & their comparison		
	5.3	Application of air compressors in textile industry		
6		**Air conditioning & humidification**	6	CO4
	6.1	Principle of air conditioning and refrigeration		
	6.2	Unit of refrigeration, concept of COP		

	6.3	Psychrometric properties of air – DBT, WBT, Specific humidity, relative humidity, Sensible heating & cooling		
	6.4	Application of air conditioning & humidification in textile industry		

V. LIST OF ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COs
1	To study basic components in electrical system	2	CO1
2	To study series and parallel connections of ac components	2	CO1
3	To study construction of DC Machine	2	CO2
4	To study speed control of DC Motor	2	CO2
5	To measure electrical current, power & energy	2	CO2

VI. ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Tutorials
- Midterm Test Exam
- Self-learning
- Term Work
- Seminar/Presentation

Summative Assessment (Assessment of Learning)

- End Term Exam
- Tutorial Performance

VII. SUGGESTED COS-POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes * (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	3	1	2	3	2	2	2	2	2
CO2	2	2	1	3	2	2	3	3	3
CO3	2	2	3	2	2	1	3	2	2

CO4	1	2	1	2	3	2	1	2	3

Legends :- High:03, Medium:02, Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the textile industry.

PSO2: Understand the impact of textile processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for life-long Learning.

VIII. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFERENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	B. L. Theraja , S.Chand	Fundamentals of Electrical engineering and electronics	S.Chand & amp; Company, 2009.
2	Hiren Joshi, Gouri Joshi A.K. Gupta	Electronic Controls for Textile Machinary-	NCUTE
3	R. S. Khurmi and J. K. Gupta	Thermal Engineering	S. Chand and Company, New Delhi
4	R.K.Rajput	Thermal Engineering	Laxmi Publicashions (P) Ltd ,9th Edition 2013

Curriculum Coordinator

Head of the Department

Dean Diploma

BOS VJTI Approval Dt. 10/07/2024

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE
DIP. EXAM
MATUNGA
MUMBAI-19

DIPLOMA PROGRAMME	: DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	: DTE
SEMESTER	: FOURTH
COURSE TITLE	: TECHNICAL SKILL
COURSE CODE	: 236TE47

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self-learning	CR	PAPER HRS	FA-TH (MST)		SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
												FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
-	-	2	1	1.5	-	-		-	-		-	25	10	20	-	25	10	50

Total IKS Hrs for Sem.: Hrs

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment, SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# Online Examination, @$ Internal Online Examination

Course Category: Discipline Specific Course Core (DSC): 3, Discipline Specific Elective (DSE): 0, Value Education Course (VEC): 1, Intern/Apprentice/Project/Community (INP): 0, Ability Enhancement Course (AEC): 2, Skill Enhancement Course (SEC): 2, Generic Elective (GE): 0

II. COURSE OUTCOMES (COs)

Students will be able to achieve the following COs on completion of course based learning

- CO1 – Understand the importance and type of technical skills in personal and professional environment.
- CO2 – Understand the knowledge of technical writing.
- CO3 - Acquire the skills about interview procedure and presentations.
- CO4 – Understand about Leadership, team building, decision making and stress management.
- CO5 – Understand about various aspects of professional attributes and learn ways to develop personality.
- CO6 – Understand the managerial skill.

III. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION I							
Unit & Sub-Unit		Topics/Subtopics	Hours	COs	R Level	U Level	A Level
1		**Technical Skills - Introduction**	**03**				
	1.1	Listening and Reading Skills: Listening as an active skill, Types of listeners, Listening to fill up information, Intensive listening, Developing effective listening skills, Barriers to effective listening skills. Identifying the topic sentence		CO1	40%	30%	30%
	1.2	Writing Skills: Sentence formation, Paragraph and Essay writing.		CO1	20%	40%	40%
2		**Technical Writing**	**05**				
	2.1	Letter Writing: Formal, Informal and dime-official letters, Business Letter.		CO2	20%	40%	40%
	2.2	Report Writing: Basics of Report Writing, Structure of a report, Types of reports, Job application.		CO2	20%	40%	40%
3		**Interview Skills**	**08**				
	3.1	Types of Interviews, Appropriate use of non-verbal communication.		C03	20%	40%	40%
	3.2	Group Discussion: Basics of group discussion, difference between group discussion and debate.		C03	20%	30%	50%
	3.3	Presentation Skills: Oral presentation and public speaking skills, Business presentation.		CO3	20%	30%	50%

SECTION II							
Unit & Sub-Unit		Topics/Subtopics	Hours	COs	R Level	U Level	A Level
4		**Leadership**	**06**				
	4.1	Introduction: Definition of Leaders and Leadership, Behavioral theories of leadership.		CO4	30%	30%	40%
	4.2	Case Study.		CO4	30%	30%	40%
5		**Professional Attributes and**	**05**				

	5.1	Professional Ethics, Integrity, Responsibility and Accountability, Professional Behavior Pro actively Planning for One's Career.		CO5	30%	40%	30%
6		**Managerial Skills**	05				
	6.1	Managerial Skills: Define, Types: Technical skills, Conceptual skills and Human or interpersonal management skills, Analytical Skills.		CO6	30%	40%	30%

IV. ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Tutorials
- Self-learning
- Term Work
- Seminar/Presentation

V. SUGGESTED COS-POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes * (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	3	-	1	1	2	-	3	1	3
CO2	2	1	1	1	1	-	3	1	1
CO3	2	-	1	1	1	-	3	1	2
CO4	2	1	1	1	2	-	3	1	2
CO5	3	-	1	1	2	-	3	1	2

CO6	3	-	-	1	-	2	3	1	2

Legends :- High:03, Medium:02, Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the textile industry.

PSO2: Understand the impact of textile processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

VII.SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFERENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	David A. McMurrey, Joanne Buckley	Handbook for Technical Writing	Cengage Delmar Learning India Pvt
2	Prof. (Col) P S Bajaj and Dr. Raj Agrawal	Business Ethics – An Indian	Biztantra, New Delhi,
3	Robbins, S.P. & Judge	Organizational Behavior	Pearson Education
4	John R Boatright,	Ethics and the conduct of Business	Pearson education
5	Stephen R. Covey	The 7 Habits of Highly Effective People	Free Press

Curriculum Coordinator

Head of the Department

Dean Diploma

BOS VJTI Approval Dt. 10/07/2024

DIPLOMA PROGRAMME	: DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	: DTE
SEMESTER	: FOURTH
COURSE TITLE	: ENVIRONMENT STUDIES AND SUSTAINABILITY
COURSE CODE	: 236TE48

I.TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self-learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
-	-	2	2	2	-	-	-	-	-	-	25	10	-	-	25	10	50

Total IKS Hrs for Semester: 0 Hrs

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment, SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# Online Examination, @$ Internal Online Examination

Course Category: Discipline Specific Course Core (DSC) : 3, Discipline Specific Elective (DSE) : 0, Value Education Course (VEC) : 1, Intern/Apprentice/Project/Community (INP) : 0, Ability Enhancement Course (AEC) : 2, Skill Enhancement Course (SEC) : 2, Generic Elective (GE) : 0

II. Course Objectives: At the end of this course students will be able to

- Know multidisciplinary nature of environmental studies.
- Know alternative energy resources and its application.
- Know about solid wastes management.
- Know about the concept of environmental social governance.
- Know about the importance of environmental studies in textile industry.

III. COURSE OUTCOMES (COS)

Students will be able to achieve the following COS on completion of course based learning

CO1	Develop Public awareness about environment.

CO2	Suggest alternative energy resources for textile industry.
CO3	Observe techniques to control pollution and health hazards in textile industry.
CO4	Apply methods for solid waste management in textile field
CO5	Understand the concept of environmental social governance and environmental sustaiablility.
CO6	Compare up-cycling and recycling in Textile Engineering.

IV. LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COS
1.	Sustainable practices in dyeing.	2	CO1
2.	Textile applications for renewable energy.	2	CO2
3.	Energy audit of a textile company.	2	CO2
4.	Use of textiles to reduced pollution.	2	CO3
5.	Report on health issues (Physical and Mental) in textile industry.	2	CO3
6.	Textile waste management.	2	CO4
7.	Implementation of Environmental Social Governance for sustainability.	2	CO5
8.	Report on Life cycle analysis of Textile products.	2	CO5
9.	Up-cycling and recycling of textile post-consumer waste.	2	CO6
10.	Recycling of PET bottles.	2	CO6
11.	Recycling and disposal of technical textiles.	2	CO6
12.	Recycling of sustainable materials.	2	CO6

V. SLA

- Students in a group of 5 to 7 shall give seminar on environmental related issues in textile industry.
- Visit to sustainable textile product manufacturing organization.

VI. ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Tutorials
- Self-learning
- Term Work
- Seminar/Presentation

Summative Assessment (Assessment of Learning)

- End Term Exam
- Tutorial Performance

VII. I.SUGGESTED COS-POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2
CO1	3	-	-	-	3	-	3	-	-
CO2	3	-	-	-	3	-	3	-	-
CO3	3	-	-	-	3	-	3	-	-
CO4	3	-	-	-	3	-	3	-	-
CO5	3	-	-		3		3		
CO6	3	-	-	-	3	-	3	-	-

Legends :- High:03, Medium:02,Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the textile industry.

PSO2: Understand the impact of textile processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

IX. SUGGESTED LEARNING MATERIALS TEXTBOOKS/WEBSITES:

Sr. No	Author	Title	Publisher
1	Michael Allaby	Basic environmental sciences	Routledge publication, 2nd edition, 2000, ISBN: 0-415-21176-X

2	Erach Bharucha	Environmental studies	University Grants Commission, New Delhi
3	Rajagopalan	Environmental studies	3rd edition, Oxford University press, USA, ISBN: 9780199459759, 0199459754
4	Shashi Chawla	A text book of environmental studies	Tata Mc Graw - Hill New Delhi
5	Keith Slater	Environmental Impacts of Textiles: Production, Processes and Protection	Wood Head Publishing Series in Textiles, 1st Edition, 2003
6	Subramanian Senthilkannan Muthu	Sustainability in the Textile Industry	Springer Publication, 2017

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