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	**: Second**	**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	MATHEMATICS-II	MA-II	AEC	236MA21	6	4	2	-	2	8	4	3	30	70	28	100	40	25	10	-	-	25	10	150
2	PHYSICS	PHY	AEC	236PH22	2	4	-	2	1	7	3.5	3	30	70	28	100	40	25	10	25@	10	25	10	175
3	YARN MANUFACTURE I	YM-I	DSC	236TE23	2	4	-	2	-	6	3	3	30	70	28	100	40	25	10	25#	10	-	-	150
4	FABRIC MANUFACTURE I	FM-I	DSC	236TE24	2	4	-	2	-	6	3	3	30	70	28	100	40	25	10	25#	10	-	-	150
5	FABRIC STRUCTURE II	FS-II	DSC	236TE25	-	4	1	-	-	5	2.5	3	30	70	28	100	40	25	10	-	-	-	-	125
6	COMMUNICATION AND PRESENTATION SKILLS	CPS	SEC	236HM26	-	-	-	2	2	4	2	-	-	-		-	-	25	10	-	-	25	10	50
7	BASIC WORKSHOP PRACTICE	BWP	SEC	236ME27	-	-	-	2	-	2	1	-	-	-		-	-	25	10	-	-	-	-	25
8	SOCIAL AND LIFE SKILLS	CLS	VES	236TE28	-	-	-	2	-	2	1	-	-	-		-	-	50	20	-	-	-	-	50
Total					**12**	**20**	**3**	**12**	**5**	**40**	**20**	**-**	**150**	**350**	**140**	**500**		**225**		**75**		**75**		**875**

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** | **Dean - Diploma**

DIPLOMA PROGRAMME	**: DIPLOMA IN TEXTILE ENGINEERING**
PROGRAMME CODE	**: DTE**
SEMESTER	**: SECOND**
COURSE TITLE	: MATHEMATICS – II
COURSE CODE	: 236MA21

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	2	-	2	4	3	30	70	28	100	40	25	10	-	-	25	10	150

Total IKS Hrs for Semester: 6 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

1. To teach students basic facts, concepts and principles of mathematics as a tool to analyze engineering problems.
2. To make students well versed in the prerequisites for further studies in mathematics and engineering.

III.COURSE OUTCOMES (COs)

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

- CO1 – Use derivatives in applications, apply formulae and different methods of integration in Engineering concepts. Apply definite integral to find area under curve, mean and RMS
- CO2 – Use different methods to solve differential equations.
- CO3 – Apply basics of statistics to solve the problems.

IV.COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I								
Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
1		Higher ordered derivative	4	3	1	40%	40%	20%
	1.1	Second ordered derivative of explicit functions						
2		Applications of Derivative	6	8	1	40%	40%	20%
	2.1	Maxima and minima (simple numerical problems)						
	2.2	Tangent and normal						
3		Integration	20	24	1	40%	40%	20%
	3.1	Definition of integration. Integration of standard functions.						
	3.2	Theorems of integration. Simple problems based on standard results. $\int f(ax+b)dx$, $\int \frac{f'(x)}{f(x)}dx$						
	3.3	Methods of Integration 3.3.1 Integration of rational functions. ($\frac{1}{x^2+a^2}$, $\frac{1}{\sqrt{x^2+a^2}}$, $\sqrt{x^2+a^2}$ etc nine formulae) 3.3.2 Integration by partial fractions. (linear and repeated linear factors) 3.3.3 Integration by parts.						
4		Indian knowledge system Vedic Mathematics	6					
SECTION - II								

Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
5		Definite Integral	6	9	1	40%	40%	20%
	5.1	Definition of definite integral.						
	5.2	Properties of definite integral with simple problems.						
	5.3	Applications of definite integral 4.3.1 Area under the curve. 4.3.2 Mean and RMS values						
6		Differential equations.	6	9	2	40%	40%	20%
	6.1	Order and degree of differential equations.						
	6.2	Method to solve differential equations of first order and first degree.						
		6.2.1 Variable separable method.						
		6.2.2 Linear differential equation.						
7	7.1	Statistics	16	17	3	40%	40%	20%
	7.2	Mean, Standard Deviation using step deviation method. Variance and coefficient of variation.						
	7.3	Elementary Probability						
		7.3.1 Combination formula ${}^{n}C_{r}$, meaning and evaluate type of problems						
		7.3.2 Sample space, Types of events						
		7.3.3 Definition of probability, simple problems						
		7.3.4 Conditional probability						
		7.3.5 Independent events						
		7.3.6 Multiplication theorem simple numerical problems						
		7.3.7 Addition theorem. simple numerical problems						

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	Higher ordered derivative, maxima and minima, tangent and normal	2	1

2	Integration using standard results	2	1
3	Integration of rational functions	2	1
4	Integration by partial fractions.	2	1
5	Integration by parts.	2	1
6	Definite integral. Area under the curve, mean, R.M.S.	2	1
7	Differential Equations	2	2
8	Mean, standard deviation, variance and coefficient of variation.	2	3
9	Elementary Probability, Multiplication Theorem, Addition Theorem	2	3

VI.ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Tutorials
- Mid Semester Test
- Self-learning
- Term Work

Summative Assessment (Assessment of Learning)

- End Semester Examination.

SUGGESTED SELF LEARNING ASSIGNMENTS/MICROPROJECT/ACTIVITIES

- Activities to help students remember formulae. Two tests based directly only on formulae.
- Find applications in engineering where one or more above concepts are us.

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	2	1	1	1	-	-	1	1	-
CO2	2	1	1	1	-	-	1	1	-

CO3	2	1	1	1	-	-	1	1	-
CO4	2	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	B. M. Patel, J. M. Rawal	Applied Mathematics	Nirali Prakashan
2	S. P. Deshpande	Mathematics for Polytechnic	Pune Vidyarthi Griha Prakashan.
3	Deepak Singh	Mathematics-II	Khanna Book Publishing Co. (P) Ltd. ISBN: 978-93-91505-42-4
4	Garima Singh	Mathematics-II	Khanna Book Publishing Co. (P) Ltd. ISBN: 978-93-91505-52-3

Curriculum Coordinator | Head of the Department | Dean Diploma

BOS VJTI Approval dated 5/3/2024

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MATUNGA MUMBAI-19

DIPLOMA PROGRAMME	**: DIPLOMA IN TEXTILE ENGINEERING**
PROGRAMME CODE	**: DTE**
SEMESTER	**: SECOND**
COURSE TITLE	**: PHYSICS**
COURSE CODE	**: 236PH22**

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	-	2	1	3	3	30	70	28	100	40	25	10	25@	10	25	10	175

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, Internship/Apprentice/Project./Community (INP):0, Ability Enhancement Course (AEC): 2, Skill Enhancement Course (SEC): 2, Generic Elective (GE):0

RATIONAL

Physics is a foundation of any engineering discipline. Its principles, laws, rules, results and conclusions drawn from observations and predictions of various phenomena occurring in nature; play important role in solving field problems in engineering and technology.

Though the span of physics is from quark to galaxy or particle physics to astrophysics; here certain topics are carefully selected for particular discipline. These topics will provide sufficient fundamental as well as background knowledge for the particular branch. Proper

attention is given to the selection of sub-topics and their depth so that student will be able to cope up with innovations and new technologies in his field.

Various phenomena, principles, laws, rules discovered and invented by physics are used for industrial, engineering and technological applications. The overall growth of various engineering disciplines, namely, mechanical, electrical, electronics, civil, environmental and so on depends upon the development of physics and its detail understanding.

COURSE OUTCOMES (COS)

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

- CO1 - Use various system for measurements and apply the knowledge to handle measuring instruments.
- CO2 - Understand properties of matter like elasticity, viscosity, surface tension along with relevant formulae, applications and problem solving based on it.
- CO3 – Understand various concepts associated with the electricity and magnetism.
- CO4 - Understand principles of heat, thermodynamics, sound and apply it to solve the problems based on it.
- CO5 - Understands concepts used in various phenomena of optics, such as wave theory, interference, diffraction, polarization etc. along with their applications and problems based on it.
- CO6 - Understand concepts of modern physics used in x-rays, photoelectric effect, lasers and optical fiber with their applications and problem based on it.

COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	COS	R Level	U Level	A Level
1	Measurements	10	10	1	40%	40%	20%
1.1	Need of measurements, requirements of standard unit, CGS, MKS, FPS and SI systems, fundamental and derived quantities/units, dimensions and dimensional analysis, problems						
1.2	Vernier caliper, screw gauge, spherometer. Least counts and range of voltmeter, ammeter and thermometer.						
1.3	Physics in Indian Knowledge System - Bhaskarachaya (Theory of gravity,Surya siddhanta & Sidhanta						

	shriomani), Lilavati (Gurutvakashan Shakti).						
2	Properties of matter	10	10	2	40%	40%	20%
2.1	Elasticity- elasticity, plasticity, Hooke's law, Young's, Bulk and rigidity modulus, problems, relation between them, ultimate and breaking stress, factor of safety, work factor, Tenacity, wire under continuously increasing load. Idealized load elongation curve or stress strain for textile fiber.						
2.2	Surface tension - cohesive and adhesive forces, sphere of influence, molecular theory of surface tension, angle of contact, capillarity, problems.						
2.3	Viscosity - velocity gradient, Newton's law of viscosity, coefficient of viscosity, Stokes' law of viscosity, Stokes' method of viscosity, problems, laminar and turbulent flow, critical velocity, Reynold's number						
3	Electricity and magnetism	12	15	3	40%	40%	20%
3.1	Electricity – Coulomb's law, Electric field, Intensity of electric field, Electric Potential, Capacitance, Capacitors in series and parallel, Ohm's law, resistance, conductance, resistivity, conductivity, series and parallel combination of resistors, problems, Wheatstone's bridge, heating effect of electric current.						
3.2	Magnetism - Magnetic field due to magnet and current carrying conductor, Intensity of magnetic field, Magnetic induction B, types of magnetic materials, Solenoid.						

SECTION - II

Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
4	Heat and thermodynamics	12	15	4	40%	40%	20%

4.1	Gas laws - Boyle's law, Charle's law, Gay- Lussac's law, absolute zero, Kelvin scale, Cp, Cv and Mayer's relation, problems, isothermal, adiabatic, isobaric and isochoric processes.						
4.2	Expansion and transmission of heat- coefficients of linear, areal and cubical expansion, modes of transmission of heat, laws of thermal conductivity, coefficient of thermal conductivity laws of thermodynamics.						
4.3	Sound: Introduction, types of waves, sound wave, Longitudinal wave and its characteristics, eco, reverberation and acoustics, application of sound in textile industry.						
5	Optics	10	10	5	40%	40%	20%
5.1	Wave theory - wave front, wave normal, laws of reflection and refraction, problems, Huygen's principle, dispersion, total internal reflection.						
5.2	Interference - principle of superposition, constructive and destructive interference, conditions to obtain interference pattern.						
5.3	Diffraction – definition, types of diffraction, single slit diffraction pattern, diffraction grating, grating element, grating formula, problems, determination of wavelength of light.						
5.4	Polarization - polarized and unpolarized light, polarizer, analyzer, optical activity, optical rotation, specific rotation, polarimeter.						
6	Modern Physics	10	10	6	40%	40%	20%
6.1	X-rays - Coolidge X-ray tube, continuous characteristic and X-rays, problems, properties and applications, Moseley's law.						
6.2	Photoelectric effect - Planck's theory of radiation, Einstein's						

	photoelectric equation, problems, photocells - photo-emissive, photovoltaic and photoconductive (construction, working and applications)						
6.3	Lasers – Properties, basics of production, types of lasers, applications in engineering						
6.4	Optical Fibers – Introduction, Principle of working, Types, applications						

LIST OF PRACTICALS/ASSIGNBMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COS
1	Use of Vernier calliper and observations with Travelling microscope	2	1
2	Use of micrometre screw gauge	2	1
3	Determination of surface tension of a liquid using capillary action	2	2
4	Determination of coefficient of viscosity of liquid by stokes method	2	2
5	To verify Ohm's law and find specific resistance of material of wire.	2	3
6	To find the refractive index of glass slab by Snell's law	2	5
7	To find wavelength of laser light using diffraction grating	2	5
8	To find velocity of sound in air using resonance tube	2	4
9	To find coefficient of Thermal conductivity of a good conductor by Searl's method	2	4
10	To find Galvanometer resistance using meter bridge	2	3
11	To find unknown resistance and verify laws of resistances using meter bridge (Resistance in series and parallel)		3
12	To compare emfs of cells using potentiometer	2	3

SUGGESTED SELF LEARNING ASSIGNMENTS/MICROPROJECT/ACTIVITIES

Assignments (if any)

- Convert the units of a given physical quantity from one system of units to another.
- Measure room temperature of hot baths / bodies by using mercury thermometer and convert it into different unit systems.

- Enlist information like band gap, material used, dimension about different semiconductor device.
- Give details about the explanation of concept like electrostatics, magnetic domain, current.
- Applications of optical fibers in civil, mechanical, electrical engineering etc.

Micro Project (if any)

- Conductivity: Collect different materials such as metal, plastics, glass etc. and prepare chart of their conductivity.
- Vernier Calipers: Prepare prototype vernier caliper of desired least count using card sheet.
- LDR: Use Light dependent resistor for measuring the intensity of light.

ASSESMENTS METHODOLOGIES /TOOLS

Formative Assessment (Assessment of Learning)

- Mid semester test
- Timely practical journal completion
- Performance in practicals

Summative Assessment (Assessment of Learning)

- End Term Exam
- Practical exam

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	1	1	-	-	2	2	-
CO2	3	2	1	1	-	-	1	2	-
CO3	3	2	1	1	-	-	1	1	-
CO4	3	2	1	1	-	-	1	2	-
CO5	3	2	1	1	-	-	1	1	-
CO6	3	2	1	1	-	-	3	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.

SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFRENCE BOOKS/ WEBSITES

Sr. No	Author	Title	Publisher
1	--	XIth standard physics book	HSC Board, M.S. / NCERT
2	--	XIIth standard physics book	HSC Board, M.S. I NCERT
3	Halliday D., Resnik R. and Walker	Fundamentls of physics extended	Wiley India, New Delhi, 8th edition
4	Serway R A and Jewett J W	Physics for scientists and Engineers	Cengage learning, New Delhi, 6th edition
5	Verma H C	Concepts of Physics -Part I and II	Bharti Bhavan, New Delhi

Curriculum Coordinator

Head of the Department

Dean Diploma

BOS VJTI Approval Dt. 05/03/2024

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE
DIP EXAM
MATUNGA
MUMBAI-19

DIPLOMA PROGRAMME	**: DIPLOMA IN TEXTILE ENGINEERING**
PROGRAMME CODE	**: DTE**
SEMESTER	**: SECOND**
COURSE TITLE	**: YARN MANUFACTURE-I**
COURSE CODE	**: 236TE23**

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	-	2	-	3	3	30		70	28	100	40	25	10	25	10	-	-	150

Total IKS Hrs for Sem : 2 Hrs

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

II. RATIONALE

A textile engineer must deal with various textile materials and machines in the industries. The study of basic concepts of yarn and fabric manufacturing like blow room, carding, combing, speed frame, ring frame etc. will help the students of textile to understand the yarn manufacturing processes to produce a yarn. Emphasis is laid on the textile applications of various types of yarns. This course is developed in a way by which fundamental information will help diploma engineers apply the basic principles of yarn in textile processing to solve broad-based problems.

In spinning, the knowledge of cotton ginning and baling process, opening, cleaning, mixing of fibers and carding is of prime importance to manufacture yarn from fibers. The opening, cleaning, mixing of fibers and carding affect the properties of yarn produced in spinning, and furthermore, it affects fabric

properties. So, it is essential for textile engineers to learn the principles of machines involved in the blow room and carding. This course describes basic facts, concepts, and principles of opening, cleaning of fibers and fiber individualisation.

Furthermore, studying Yarn Manufacture helps students appreciate the historical and cultural significance of Textiles and its applications in diverse fields, thereby fostering textile learning and a deeper understanding of the world of textiles. Hence the course provides insight to the various yarn structures and their effect on the yarn properties. By incorporating the topics like yarn numbering system students comprehend how to approach textile engineering problems like calculating the yarn thickness and yarn production levels from a mathematical perspective, enabling them to devise efficient and effective solutions and this leads to preparing Textile Diploma graduates, who are well-rounded, adaptable and capable of making significant contributions to the branch-specific problems.

III. COURSE OUTCOMES (COs)

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

- CO1 - Use the different fibres available to produce different types of coarse and fine yarns.
- CO2 - Use the different methods of fibre cleaning for different fibres to produce yarns by various methods.
- CO3 - Use the concept of draft constant, change pinion, actual and mechanical draft. Compare the different types of yarns on the basis of their physical properties like fineness and fibre orientation.
- CO4 - Use the blow room machines for optimum opening, cleaning, mixing of fibres and prepare the input material for carding.
- CO5 - Use the carding machine for the individualisation of fibres and cleaning of raw materials.
- CO6 - Calculate linear speeds, drafts and production values for blow room and carding machines.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I								
Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
1		Introduction to fibres and yarns:	8	10	CO1	60%	20%	20%
	1.1	Classification of fibres based on length (staple, filament), based on origin (natural, regenerated and man made) and based on chemical nature (cellulosic, protein, mineral). Physical properties of some textile fibres. Essential and desirable properties of fibres.						
	1.2	Different types of yarns like continuous filament yarns - monofilament and						

		multifilament, Textured yarns, Staple spun yarns, Composite yarns, Blended yarns, Doubled yarns, Cover yarns, Core spun yarns and Fancy yarns.						
	1.3	Introduction to the Indian traditional method of spinning by using the charkha (IKS).						
	1.4	Yarn Numbering System- Tex, kTex, dTex, Denier, English Count, Worsted Count, Woollen Count, Metric count. Conversion from one system to another.						
2		Short Staple Spinning:	14	16	CO2	13%	62%	25%
	2.1	Ring Spun yarns and Other alternative yarns:						
		2.1.1 Process flowchart for Ring Spun yarns- Carded and Combed. Function of each process in the spinning of carded and combed yarns.						
		2.1.2 Process flowchart for staple yarns spun by alternative spinning processes. Rotor, Dref 2 and Air-jet spun yarns.						
	2.2	Fibre preparation and cleaning before baling:						
		2.2.1 Contamination in Cotton and Wool fibres. Mechanical and chemical treatments required for their cleaning. Jute retting.						
		2.2.2 Function of cotton picking, ginning and baling. Introduction to the types of ginning machines and their comparison. Importance, bale dimension and density.						
	2.3	Principle of fibre opening, type of opening and degree of opening, intensity of opening. Concept of Cleaning of cotton.Principle of fibre cleaning, Methods of cleaning, Grid and mote knives. Elements of grid, adjustments of grid bars						
3		Comparison of yarn properties:	10	9	CO3	22%	22%	56%
	3.1	Types of different cotton varieties cultivated in India (IKS) and outside India, harvesting/picking. Comparison of cotton harvesting processes, ginning and baling.						
	3.2	Some important yarn properties and their units like strength, evenness, hairiness,						

		stiffness, twist and snarling tendency.						
	3.3	Comparison of the yarn counts that can be spun on each of the ring, rotor, Dref 2 and air jet spinning systems.						
	3.4	Effect of the fibre orientation on yarn strength. Comparison of the relative strength of ring spun, rotor spun, Dref 2 and Air jet spun yarns.						
	3.5	Concept of Cleaning efficiency and resistance to cleaning: Factors influencing opening and cleaning.						
	3.6	Concept of Draft and its Calculations: Mechanical Draft and Actual Draft, Relation between mechanical and actual draft.						

SECTION - II								
Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
4		Construction and working of the Blow Room machines:	10	10	CO4	20%	60%	20%
	4.1	Construction and working of Conventional bale openers and Automatic bale openers, Comparison between Conventional and Automatic bale openers.						
	4.2	Conventional and modern coarse cleaning machines like Step cleaner, Axiflow, Uniclean.						
	4.3	Manual mixing (IKS) and modern blending/mixing machines. Uniblend and Tuft Blenders.						
	4.4	Construction and working of modern fine cleaners like ERM cleaner, Cleanomat Cleaner, Unistore.						
	4.5	Dedusting Machines like Dust Extractor, Dustex DX. Mechanical and Pneumatic transport of material.						
	4.6	Control of material flow: Classification, Optical regulating systems in batch operation, continuous operation.						
	4.7	Damage prevention like Metal detectors, Fire eliminator and waste management. Cotton Contamination Cleaning Machines: Basics, Vision Shield, Vetal Scan.						
5		Construction and working of the Carding	14	16	CO5	25%	50%	25%

		machine:						
	5.1	Transport of material from Blow Room to Card: Scutcher Lap machine and different Chute Feed systems.						
	5.2	Objectives of Carding: Opening into individual fibers, elimination of impurities, elimination of dust, disentangling neps, elimination of short fibers, fiber blending, fiber orientation and sliver formation.						
	5.3	The operating zones of the card (Conventional and modern): Material feed, licker-in zone- single and three licker in system, auxiliary devices, cylinder, flats- construction and movement, doffer zone, detaching and can coiling.						
	5.4	The machine drive and card clothing: Flexible, semi-rigid and metallic clothing.						
	5.5	Auto Leveling and maintenance: Different types of auto levelers and their principles. Stripping, grinding, burnishing and setting of various parts of the card.						
6		Calculations for Blow Room and Card	8	9	CO6	22%	22%	56%
	6.1	Calculation of Cleaning efficiency of Blow Room and Card.						
	6.2	Draft Calculations in Blowroom and Card. Concept of Draft Constant and Change Pinion. Mechanical Draft and Actual Draft in Blowroom and Card.						
	6.3	Production Calculations: Calculating production in various units of length and weight per unit time.						
	6.4	Definition of Nep and Nep count. factors like yarn hairiness and neps affecting fabric quality.						

V. LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COs
1	Collect different textile fibres like cotton, wool, silk, jute, polyester, viscose etc., 1.1 Classify the collected fibres on the basis of length, origin and chemical nature. 1.2 Stick them appropriately in the journal in the format of the classification chart with correct labeling.	2	CO1
2	Find the Tex, kTex, dTex, Denier, English Count, Worsted Count, Woollen Count, Metric count of the given yarn and the hank of the given sliver and roving: 6.1 Weigh the given length of yarn and calculate the Tex value of the yarn. Convert the value in other count systems. 6.2 Weigh the given hank of yarn and calculate the English Count of yarn. Convert the value in other count systems. 6.3 Weigh the given sliver and roving separately and calculate the hank of sliver and roving.	2	CO1
3	Collect different yarns like spun yarns, textured yarns, doubled yarns and fancy yarns, 2.1 Stick the collected yarns in your journal on the left hand blank page with correct labels. 2.2 Write a brief note about the various types of yarns on the right hand page of the experiment.	2	CO1
4	Observe the various machines in the workshop used in spinning cotton spun carded yarns. 3.1 Draw a flowchart of the machines observed in a correct sequence. 3.2 Write the function of each process in the sequence.	2	CO2
5	Observe the various machines in the workshop used in spinning cotton spun combed yarns. 4.1 Draw a flowchart of the machines observed in a correct sequence. 4.2 Write the function of each process in the sequence.	2	CO2
6	Observe the various machines in the workshop used in spinning Rotor, Dref 2 and Air jet spun yarns. 5.1 Draw a flowchart of the machines observed in a correct sequence for Rotor spun yarns. 5.2 Draw a flowchart of the machines observed in a correct sequence for spinning Dref 2 yarns. 5.3 Draw a flowchart of the machines observed in a correct sequence for spinning Air jet yarns.	2	CO2
7	Observe the demo of various yarn tests like yarn strength, twist, evenness in the Textile Physics Laboratory and Use a hand stapling method to determine the staple length of given fibres. Observe the trash% analysis on a Shirley Analyser: 7.1 Draw the comparative table of Ring spun, Rotor, Dref 2 and Air jet	2	CO3

	yarns indicating their relative count range, strengths, evenness, hairiness, stiffness and snarling tendency. 7.2 Prepare cotton samples for hand stapling. Perform hand stapling and determine staple length of given fibres and write the procedure to calculate the trash% in bale cotton, blow room lap and card sliver.		
8	Observe the Ginning machines in the workshop to understand separation of seeds from given fibres and the Hopper Bale Breaker and Hopper Feeder to understand Bale Opening: 8.1 Illustrate the passage of material through the ginning machines. 8.2 Illustrate the passage of material through the hopper bale breaker and hopper feeder machines.	2	CO4
9	Observe the coarse cleaning machines. a) Step Cleaner b) Axiflow 9.1 Illustrate the passage of material through the Step Cleaner and the Axiflow.	2	CO4
10	Observe the mixing machines/blenders and the fine cleaning machines: 10.1 Illustrate the passage of material through the Unimix/ Uniblend. 10.2 Illustrate the passage of material through the Cleanomat system.	2	CO4
11	Observe the dedusting machines and the metal detectors: 11.1 Illustrate the passage of material through the Dustex machine and the metal detector.	2	CO4
12	Observe the scutcher and the chute feed system in the workshop: 12.1 Illustrate the passage of material through the scutcher. 12.2 Illustrate the passage of material through the chute feed system to the card.	2	CO5
13	13.1 Observe the Carding machine in the workshop: Illustrate the passage of material through the card. 13.2 Observe the wire points of the card clothing. Draw the wire disposition for the carding and stripping action on the card stating the objective and explaining the carding angle. 13.3 Observe the maintenance procedures for the wire points on the card. Write a note about stripping, grinding and burnishing on the card.	2	CO5
14	14.1 Observe the quality control measures adopted for the output of the card. Write a note about auto leveling and Nep count. 14.2 Observe the gearing of the Carding machine in the workshop: Draw the gearing diagram of the Carding machine.	2	CO6
15	Observe the driver and the driven pulleys/gears of the Carding machine in the workshop: 15.1 Calculate the intermediate and total drafts between each part of the card. 15.2 Calculate the production of the card.	2	CO6

Note :

1. 15 practicals based on CO1, CO2, CO3, CO4, CO5 and CO6.
2. Practicals shall be engaged in the batch size of 20 to 30 students.

3. Each experiment shall carry 1.5 mark each including half mark for timely completion of each experiment. The remaining 2.5 marks are reserved for the complete and timely final submission at the end of the term.

VI. ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Midterm Test Exam
- Term Work
- Seminar/Presentation

Summative Assessment (Assessment of Learning)

- End Term Exam
- Oral/Viva voce/Practical Performance in End Sem Examination

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	2	2	2	2	3	3	2
CO2	3	2	2	3	2	2	3	3	2
CO3	3	3	3	3	2	2	3	3	2
CO4	3	3	3	3	2	2	3	3	2
CO5	3	3	3	3	2	2	3	3	2
CO6	3	3	3	3	3	2	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.

VIII. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFERENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	Werner Klein	Blowroom and Carding- Volume 1&2	The Textile Institute
2	Andrea Wynne	The Motivate Series	Macmillan Education Ltd.

IX . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://onlinecourses.swayam2.ac.in/cec23_te01/preview	Online Learning Initiatives by SWAYAM
2	https://www.youtube.com/@aartibaliga6490/playlists	Yarn Manufacture

Curriculum Coordinator Head of the Department Dean Diploma

BOS VJTI Approval Dt. 05/03/2024

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE
DIP EXAM
MATUNGA
MUMBAI-19

DIPLOMA PROGRAMME	: DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	: DTE
SEMESTER	: SECOND
COURSE TITLE	: FABRIC MANUFACTURE-I
COURSE CODE	: 236TE24

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	-	2	-	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, Internship/Apprentice/Project/Community (INP):0, Ability Enhancement Course (AEC): 2, Skill Enhancement Course (SEC) : 2, Generic Elective (GE):0

II.RATIONALE

Fabric manufacturing preparatory process includes converting the yarn into warp beams and good quality weft packages. Removal of objectionable faults in the yarn with uniform build of packages is essential for efficient weaving preparatory. Therefore, process parameters and detailed knowledge of operations and maintenance of these machines are imparted in this course.

Weaving is one of the methods of woven fabric productions. This course imparts knowledge of different motions of the loom and exposed to detailed knowledge of weaving process, power looms and their production calculations.

III.COURSE OUTCOMES (COs)

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

- CO1 – Suggest Process parameters of winding and use winding machine to produce cone or cheese.
- CO2 – Select Process parameters of Pirn winding and use pirn winding machine to produce pirn
- CO3 - Use Process parameters of warping and use warping machine to produce warper's beam.
- CO4 – Apply primary motions of plain power loom.
- CO5 – Know Secondary motions of plain power loom.
- CO6 – Select auxiliary motions of loom.

IV.COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I								
Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
1		**Winding**	16	18	C03	40%	40%	20%
	11	Introduction to winding, Object of winding, Cross wound and Parallel wound packages. Package drive and Traverse motions. Close and Open wound Packages. Density of Package, Soft and hard Wound packages, Random and precision winding						
	1.2	Different types of tensioning devices used on winding machine. Types of yarn guides used on winding machines. Mechanical and Electrical yarn clearing devices. Introduction to Knotter and Splicer, Types of knots, Types of splicing, Features of Modern winding machines.						
	1.3	Calculations related to production, efficiency, winding speed, traverse speed, angle of wind, angle of wind						
2		**Pirn winding**	8	7	CO2	40%	40%	20%

	2.1	Introduction to automatic Pirn winding machine, Objects of pirn winding, Passage of material through the pirn winding machine. Direct weft and its advantages, Rewound weft and its advantages.						
	2.2	Calculations related to production and efficiency of pirn winding machine.						
3		**Warping**	8	10	CO3	40%	40%	20%
	3.1	Objectives of warping. Classification of warping machine, Study and passage of warp sheet through beam warping machine. Study and passage sectional warping machine, Different types of creels, Features of modern warping and sectional warping machines.						
	3.2	Calculation related to production and efficiency of warping machine.						

SECTION - II

Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
4		**Primary motions**	16	15	CO4	40%	40%	20%
	4.1	Classification of Looms, Passage of warp through loom, different parts of loom and their functions. Loom drive and timing diagram for loom mechanisms						
	4.2	Shedding mechanisms: Classification, Construction, working, Early and Late shedding, Positive shedding and Negative shedding, Types of sheds.						
	4.3	Picking mechanism: Objects, Types of Picking Mechanisms, Construction and working of cone overpick mechanism, Construction and working of Side lever underpick mechanism, Construction and working of Cone underpick mechanism, Factors to be considered for increasing the strength of the pick.						
	4.4	Beat up Mechanism: Construction and working, Eccentricity of sley, Factors affecting eccentricity of the sley						
5		**Secondary motions**	8	10	CO5	40%	40%	20%

	5.1	Let-off Mechanism: Types, construction and working of negative let off motion, Effect of beam diameter.						
	5.2	Take up Mechanism: Types of Take up motion, Construction and working of five wheel and seven wheel take-up motion, Calculation of dividend.						
6		**Auxiliary motions**	**8**	**10**	CO6	40%	60%	-
	6.1	Weft fork mechanism: Types, Construction and working of Side weft fork mechanism, Comparison between side weft fork and centre weft fork motions						
	6.2	Warp Protector Mechanism: Construction and working of Loose reed and Fast reed mechanism, Comparison between loose reed and fast reed warp protector motion						
	6.3	Temples: Function, Types of temples, Oscillating backrest Brakes: Function, Construction, working of brake mechanism						
	6.4	Highlights of Textile Tradition (IKS)						
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	Draw the gearing diagram of the drive on Franz Muller winding machine and calculate winding speed, surface speed, traverse speed on Franz Muller winding machine.	2	CO1
2	Draw the gearing diagram of the drive on Metler winding machine and calculate winding speed, surface speed, traverse speed on Metler winding machine.	2	CO1
3	Observe the SSM winding machine and calculate winding speed, traverse speed and surface speed on SSM winding machine.	2	CO1
4	Observe the Pirn winding machine.	2	CO2
5	Draw the passage of warp through Sectional warping machine.	2	CO3
6	Observe and perform settings of shedding motion on the Tappet shedding mechanism.	2	CO4
7	Observe and perform settings of cone overpick mechanisms.	2	CO4
8	Observe and perform settings of side lever underpick mechanisms.	2	CO4
9	Observe and perform settings of beat-up mechanism.	2	CO4

10	Observe and perform settings of let-off mechanism and brake motion.	2	CO5
11	Observe and perform settings of 5-wheel and 7-wheel take-up mechanism.	2	CO5
12	Observe and perform settings of side weft fork mechanism.	2	CO6
13	Observe and perform settings of loose reed and fast reed motion.	2	CO6

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	3	1	2	1	1	2	3	1
CO2	3	3	1	2	1	1	2	3	1
CO3	3	3	1	2	1	1	2	3	1
CO4	3	3	2	2	1	1	2	3	1
CO5	3	3	2	2	1	1	2	3	1
CO6	3	3	2	2	1	1	2	3	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. M K Talukdar	Winding, Warping	
2	K. T. Aswani	Plain Weaving Motions	Mahajan Publishers, 1997
3	M. K. Talukdar, P.K. Sriramulu, D.B Ajgaonkar	Weaving Machines, Mechanism, Management	Mahajan Publishers Private Limited, Ahmedabad, edition 1998
4	P. R. Lord and M. H. Mohamed	Weaving : Conversion of yarn to fabric	Merrow publishing Co. Ltd., England, 2nd edition, 1988
5		Woven Fabric Production – I, Plain Power Loom	NCUTE, 2002

IX. LEARNING WEBSITES & PORTALS

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

Curriculum Coordinator | Head of the Department | Dean Diploma

BOS VJTI Approval Dt. 5/03/2024

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MATUNGA MUMBAI-19

DIPLOMA PROGRAMME	**: DIPLOMA IN TEXTILE ENGINEERING**
PROGRAMME CODE	**: DTE**
SEMESTER	**: SECOND**
COURSE TITLE	**: FABRIC STRUCTURE -II**
COURSE CODE	**: 236TE25**

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	1	-	-	2.5	3	30	70	28	100	40	25	10	-	-	-	-	125

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, Internship/Apprentice/Project/Community (INP): 0, Ability Enhancement Course (AEC): 2, Skill Enhancement Course (SEC): 2, Generic Elective (GE): 0

II.RATIONALE

Fabric Structure has a significant role in the manufacture of Woven Textiles. The structure of a fabric influences the properties of the fabric. Woven fabric is manufactured by the interlacement of vertical and horizontal threads (yarn) known as warp and weft respectively. The subject of Fabric Structure fosters the development of creative thinking, problem-solving abilities and enhances abstract thinking. Students acquire logical reasoning, problem-solving techniques and analytical thinking, which are valuable for lifelong learning and professional growth.

By engaging in the subject of Fabric Structure, students learn to represent complicated 3D structures on a 2D point paper using imaginative skills. The students are able to express and communicate the structures

in an effective manner for the production of fabrics on the machines known as looms. The students represent the steps and functions involved in the manufacture of fabrics through simple designs, cross sectional diagrams, draft, peg plans and denting order on a point paper. The students are equipped with the ability to analyze fabrics and interpret information on a point paper, make informed decisions and navigate real-world situations. Fabric Structure provides a foundation for further studies in various other textile subjects and prepares the students to tackle complex challenges. By exploring abstract concepts and logical reasoning, students develop their ability to reason, make connections, and approach problems with clarity and precision.

Furthermore, studying Fabric Structure helps students appreciate the historical and cultural significance of Textiles and its applications in diverse fields, thereby fostering textile learning and a deeper understanding of the world of textiles. Hence the course provides the insight to analyze textile engineering problems scientifically using various tools and instruments like pick glass, measuring scale, weighing scale etc. By incorporating the topic of analysis of fabrics, students comprehend how to approach textile engineering problems from a mathematical perspective, enabling them to devise efficient and effective solutions and this leads to preparing Textile Diploma graduates, who are well-rounded, adaptable and capable of making significant contributions to the branch-specific problems.

III. COURSE OUTCOMES (COs)

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

- CO1 - Represent the backed cloth on point paper along with draft, lifting plan, denting and cross-section.
- CO2 -.Represent the double cloth on point paper along with draft, lifting plan, denting and cross-section.
- CO3 - Represent the extra thread figuring fabrics on point paper along with draft, lifting plan, denting and cross-section.
- CO4 - Represent the velveteen structures on point paper along with draft, lifting plan, denting and cross-section.
- CO5 - Represent the warp pile structures on point paper along with draft, lifting plan, denting and cross-section.
- CO6 - Represent the leno waves and state the loom mechanisms required for weaving madras muslin, damask, brocade and tapestry structures.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I								
Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
1		Two dimensional advanced weaves- Backed Cloth:	10	10	CO1	30%	30%	40%
	1.1	Introduction, Types of Backed cloth, Weft-backed, Warp-backed, Methods of selection of warp ties and weft ties, Methods of stitching, Backed cloth wadded threads.						
	1.2	Study the loom mechanisms required, comparison of their special features and end use applications for Backed cloths.						
2		Two dimensional advanced weaves- Double cloths:	12	16	CO2	18%	64%	18%
	2.1	Classification of double cloth, self stitched double cloth, Reversible double cloth, beaming and drafting of self stitched double cloth, selection of suitable stitching positions.						
	2.2	Center stitched double cloth, center warp stitching, center weft stitching.						
	2.3	Interchanging double cloth - effect due to changes in the position of separating lift with continuous one and one color arrangement.						
	2.4	Wadded double cloth - Weft wadded double cloth, warp wadded double cloth.						
	2.5	Study the loom mechanisms required, comparison of their special features and end use applications for double cloths.						
3		Two dimensional advanced weaves- Extra thread figuring fabrics:	10	9	CO3	32%	36%	32%
	3.1	Extra Warp Weaves, Extra Weft Weaves. Combination weaves their construction and characteristics.						
	3.2	Extra thread figuring fabrics in the Indian traditional sarees.						
	3.3	Study the loom mechanisms required, comparison of their special features and end use applications for extra thread figuring fabrics.						

SECTION - II

Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
4		Three dimensional advanced weaves- Weft Pile Structures:	10	10	CO4	20%	40%	40%
	4.1	Classification of velveteen, All over or plain velveteen. Plain-back velveteen, length of pile, density of pile, changing the density of pile, fast pile stricture, twill-back velveteen, welt plushes, corded velveteen.						
	4.2	Study the special loom mechanisms required for weft pile structures and the comparison on the basis of their special features and end use applications.						
5		Three dimensional advanced weaves- Warp Pile structures:	12	16	CO5	32%	36%	32%
	5.1	Terry pile structures: Formation of standard pile structures to produce pile weaves on 3 picks, 4 picks, 5 picks, 6 picks. Terry ornamentation-Stripe and check pattern. Figured terry fabrics.						
	5.2	Produced with aid of wires: Warp pile fabrics produced with the aid of wire. All over and continuous pile structure.						
	5.3	Produced on Face to face principle: Warp pile fabrics produced on the face to face principle, Velvet structure, fast pile structures, Moquettes.						
	5.4	Study the special loom mechanisms required for terry weaving, special mechanisms required for face to face weaving and continuous pile structure. Comparison on the basis of their special features and end use applications.						
6		Three dimensional advanced weaves- Gauze/Leno, Madras muslin, Damask, Brocades and Tapestry structures:	10	9	CO6	20%	40%	40%
	6.1	Leno weaving with flat steel doup with an eye. Double doup, counter leno, special lifts of standard ends, Russian Cords, net leno, Leno weaving with flat steel slotted doup.						

	6.2	Introduction to Madras Muslin structure, Design, draft and peg plan of the same. History of Muslin and its origin in India (IKS)						
	6.3	Damask Reversible and non-reversible damask.						
	6.4	Figured warp rib brocade, constructional details of figured warp rib brocade.						
	6.5	Simple weft faced tapestry-two weft tapestry structure.						
	6.6	Study the special loom mechanisms required for leno weaving. Mechanisms required for producing madras muslin structures. Types of jacquards used for producing damask. Comparison on the basis of their special features and end use applications.						

V. LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COs
1	Analysis of double cloth. Design, draft, peg plan, denting.	2	CO1&CO2
2	Analysis of double cloth. Calculation of epi, ppi, count of warp, count of weft, crimp% of warp, crimp% of weft,, twist direction of warp and weft, pattern of warp and weft, calculated reed, gsm and its application/end use.	2	CO1&CO2
3	Analysis of extra warp and extra weft figured fabrics. Design, draft, peg plan, denting.	2	CO3
4	Analysis of extra warp figured fabric. Calculation of epi, ppi, count of warp, count of weft, crimp% of warp, crimp% of weft,, twist direction of warp and weft, pattern of warp and weft, calculated reed, gsm and its application/end use.	2	CO3
5	Analysis of extra weft figured fabric. Calculation of epi, ppi, count of warp, count of weft, crimp% of warp, crimp% of weft,, twist direction of warp and weft, pattern of warp and weft, calculated reed, gsm and its application/end use.	2	CO3
6	Analysis of corded velveteen. Design, draft, peg plan, denting.	2	CO4
7	Analysis of corded velveteen. Calculation of epi, ppi, count of warp, count of weft, crimp% of warp, crimp% of weft,, twist direction of warp and weft, pattern of warp and weft, calculated reed, gsm and its application/end use.	2	CO4
8	Analysis of velvet. Design, draft, peg plan, denting.	2	CO5

9	Analysis of velvet. Calculation of epi, ppi, count of warp, count of weft, crimp% of warp, crimp% of weft,, twist direction of warp and weft, pattern of warp and weft, calculated reed, gsm and its application/end use.	2	CO5
10	Analysis of terry pile fabric. Design, draft, peg plan, denting.	2	CO5
11	Analysis of terry pile fabric. Calculation of epi, ppi, count of warp, count of weft, crimp% of warp, crimp% of weft,, twist direction of warp and weft, pattern of warp and weft, calculated reed, gsm and its application/end use.	2	CO5
12	Analysis of leno fabric. Design, draft, peg plan, denting.	2	CO6
13	Analysis of leno fabric. Calculation of epi, ppi, count of warp, count of weft, crimp% of warp, crimp% of weft,, twist direction of warp and weft, pattern of warp and weft, calculated reed, gsm and its application/end use.	2	CO6
14	Observation of damask/brocade structure. Design, draft, peg plan, denting.	2	CO6
15	Observation of tapestry structure. Design, draft, peg plan, denting.	2	CO6

Note :

1. 15 tutorials based on CO1, CO2, CO4, CO5, CO3 and CO6 are covered through self learning micro projects and assignments.
2. Tutorials shall be engaged in the batch size of 20 to 30 students.
3. Each Tutorial shall carry 1.5 marks each including half mark for timely completion of each tutorial. The remaining 2.5 marks are reserved for the complete and timely final submission at the end of the term.

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	3	3	3	2	2	3	3	2
CO2	3	3	3	3	2	2	3	3	2
CO3	3	3	3	3	2	2	3	3	2
CO4	3	3	3	3	2	2	3	3	2
CO5	3	3	3	3	2	2	3	3	2
CO6	3	3	3	3	2	2	3	3	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	William Watson	Watson's Advanced Textile Design	Woodhead Publishing Limited
2	N Gokarneshan	Fabric Structure and Design	New Age International Publishers

IX. LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://onlinecourses.swayam2.ac.in/cec23_te01/preview	Online Learning Initiatives by SWAYAM
2	https://www.youtube.com/@aartibaliga6490/playlists	Fabric Structure - Elementary

Curriculum Coordinator

Head of the Department

Dean Diploma

BOS VJTI Approval dated 5/3/2024

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MATUNGA MUMBAI-19

DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	DTE
SEMESTER	SECOND
COURSE TITLE	COMMUNICATION AND PRESENTATION SKILLS
COURSE CODE	236HM26

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 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

RATIONALE:

Developing Presentation Skills by enhancing communication skills. Students will get exposure to leadership qualities (problem-solving attitude) by participating in different curriculum activities. All these will enhance their confidence and build a good language.

Making students proficient in oral skills through various activities that will enable them to perform efficiently during interviews, meetings, seminars, conferences,

group discussions, in negotiations, and conflict solutions. Giving exposure to self-learning by providing enough materials through the language laboratory's ETNL software and open source software. Improving technical communication through report writing, email drafting, and critical analysis of a situation, drawing appropriate conclusions, and presenting them precisely. Enhancing their Reading, Writing, Speaking, and Listening skills (RWSL) in the English language effectively. Developing the personality of future technologists by inculcating proper interactive skills in them and improving their power of expression required for efficacious communication in the verbal and non-verbal form to achieve success in professional life.

COURSE OUTCOMES (COs)

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

- CO1 – Enhancing speaking skills and self-confidence
- CO2 – Developing analytical ability and technical communication skills
- CO3 - Developing interactive skills and power of expression

COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I								
Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
1		**ORAL SKILLS**	**08**	**05**	**CO1**	**30%**	**30%**	**40%**
	1.1	Dialogue and Role Play Group Discussion Elocution Extempore Presentation Skills JAM (Just A Minute talk)						
	2	**TECHNICAL COMMUNICATION**	**06**	**05**	**CO2**	**20%**	**20%**	**60%**
	2.1	Editing Critical-Analysis of articles /write up.						

	2.2	Report Writing /Drafting proposals Drafting Email, Notices, Minutes of a Meeting Resume Writing						
3		**LISTENING AND INTERACTIVE SKILLS: Language Laboratory**	**08**	**05**	**CO1**	**30%**	**30%**	**40%**
	3.1	Phonetics						
	3.2	Audio-visual Communication Videos on Intonation and pronunciation Rise and fall of syllables in the language						
	3.3	Power Point Presentation techniques						
4		**Persuasive Communication and Body language**	**05**	**05**	**CO3**	**30%**	**30%**	**40%**
	4.1	• Kinesics • Haptics • Proxemics • Vocalics • Chronemics						
	4.2	Manners and Etiquette • Table Manners • Telephone & Email Etiquettes						
5		**SOFT SKILLS**	**05**	**05**	**CO3**	**20%**	**60%**	**20%**
5.1		Life skills: Self-awareness and Self-analysis, Adaptability, Resilience, Emotional Intelligence and Empathy, Self Esteem, etc.						
		Total	**32**	**25**				

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

LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COs
1	Writing and delivering a speech.	2	CO1
2	Conducting group discussion on a given topic representing teamwork	2	CO2
3	Writing a critical analysis of an article that requires critical thinking	2	CO1
4	Writing short reports/ Newspaper reports	2	CO2
5	Drafting emails	2	CO2
6	Drafting cover letters as per industry situations along with application	2	CO2
7	Resume Writing	2	CO3
8	Interview Skills -Mock Interviews	2	CO3
9	PowerPoint Presentation	2	CO3
10	Phonetics exercises in the language laboratory	2	CO3

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

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	1	1	1	-	3	-	2	2	2
CO2	1	1	1	-	3	-	2	2	2
CO3	1	1	1	-	3	-	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.

SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFERENCE BOOKS/WEBSITES

Sr.No	Author	Title	Publisher
1	Board of Editors N. A Lavande, V.H. Sawant, S R Madan, KB Laghane and Santosh Lomte	Written and Spoken Communication in English	Universities Press, 2007
2	Dr. Jagdish Saboo, Dr. Vivek Vishwarupe, Dr. Ravindra Nistane & Prof. Dimple Mapari	Plumage, Communication Skills in English	Orient BlackSwan,2017
3	English and Soft Skills Volume 2	S. P. Dhanavel	Orient BlackSwan,2019
4	Gupta C. B.	Contemporary Management	APH, New Delhi, First edition, 1992
5	Sekaran Uma	Organisational Behaviour	Tata Mcgraw Hill, New Delhi, Second edition,2008
6.	Raman Meenakshi, Sharma Sangeeta	Technical Communication	OUP, India, Second impression, 2004

LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	www.newagegolden.com	Refer to this website for speech writing, diary entry, and paragraph writing
2	grammarly.com/blog	For constructing effective paragraphs and improving clarity
3	International Phonetic Association (IPA) Website	offers audio examples and charts to help understand and transcribe sounds

Curriculum Coordinator Head of the Department Dean Diploma

BOS VJTI Approval dated 5/3/2024

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MUMBAI-19

DIPLOMA PROGRAMME	DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	DTE
SEMESTER	SECOND
COURSE TITLE	BASIC WORKSHOP PRACTICE
COURSE CODE	236ME27

I.Teaching & 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	-	-		-	-	-	-	25	10	-	-	-	-	25

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, Internship/Apprentice/Project./Community (INP):0, Ability Enhancement Course (AEC): 2, Skill Enhancement Course (SEC): 2, Generic Elective (GE):0

II. Rationale:-

Textile Engineering Diploma student is expected to know basic workshop practice like Wood working and hot working processes. The students are required to identify, operate and control various machines. The students are required to select and use various tools and equipments related to Wood working and smithy processes.

III. Course Objectives:

1. To lay a strong foundation in study and practice of basic workshop processes which is the backbone in Engineering.
2. To make students well versed to identify, select and use various marking, measuring, holding, striking and cutting tools &equipments.

IV. Course Outcomes:

Student should be able to

CO1	Learn types of engineering material and their properties.
CO2	Operate, control different machines and equipments.
CO3	Inspect and produce the job as per specified dimensions.
CO4	Adopt safety practices while working on various machines.

V. Course Content:

List of Practical:

Sr. No.	Practical	Hours	CO
1	**CARPENTRY SHOP:** Demonstration of different wood working tools / machines. Demonstration of different wood working processes, like plaining, marking, chiseling, grooving, turning of wood etc. One simple job involving any one joint like mortise and tenon, dovetail, bridle, half lap etc.	10	1
2	**FITTING SHOP:** Demonstration of different fitting tools and drilling machines and power tools. Demonstration of different operations like chipping, filing, drilling, tapping, cutting-etc. One simple fitting job involving practice of chipping,filing, drilling, tapping, cutting-etc.	10	2
3	**WELDING SHOP:** Demonstration of different welding tools / machines. Demonstration of Arc Welding, Gas Welding, Gas Cutting and rebuilding of broken parts with welding. One simple job involving butt and lap joint.	6	2,4
4	**SHEET METAL SHOP:** Demonstration of different sheet metal tools / machines. Demonstration of different sheet metal operations like sheet cutting, bending, edging, end curling, lancing, soldering and riveting. One simple job involving sheet metal operations and soldering and riveting.	6	3

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	-	-	2	-	-	3	3	3
CO2	3	-	-	2	-	-	3	3	3
CO3	4	-	-	3	-	-	3	1	1
CO4	4	-	-	3	-	-	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.

VII. Reference Books:

Sr. No.	Author	Title	Publisher and Edition
1	K.C.John	Mechanical Workshop Practice	PHI Learning Pvt. Ltd. EEE 2010
2	B.S. Raghuwanshi	Workshop Technology	Dhanpat Rai and sons, New Delhi, 9 th Edition, 2002
3	S.K. Hajra Chaudhary	Workshop Technology Vol I & II	Media Promotors and Publisher, New Delhi, 8th edition, 1986

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BOS VJTI Approval Dt. 05/03/2024

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MATUNGA MUMBAI-19

DIPLOMA PROGRAMME	: DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	: DTE
SEMESTER	: SECOND
COURSE TITLE	: SOCIAL AND LIFE SKILLS
COURSE CODE	: 236TE28

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	-	-	-	-	-	-	50	20	-	-	-	-	50

RATIONALE

Life skills can be defined as abilities that enable humans to deal effectively with the demands and challenges of life. Social skills are a subset of life skills that are needed for successful, healthy relationships to easily adapt when moving from one social situation to the next. They help regulate our emotions effectively and develop enduring, supportive relationships, we're happier and healthier. This is why developing life skills and eventually social skills is key not only to being successful in life, it's key for our health and well-being. Thus, Teaching of Social and life skills provide students with essentials of knowing, understanding attitudes, values, morals, social skills and better equip them to handle stress and build their self efficacy, self esteem and self confidence.

Note: The course offers five different alternatives (modules) for achieving above outcomes. Students must complete any one module from the following given options.

a. MODULE-I: Unnat Maharashtra Abhiyan (UMA)

b. MODULE-II: National Service Scheme (NSS)

c. MODULE-III: Universal Human Values

d. MODULE-IV: Value Education (Unnati Foundation)

e. MODULE-V: Financial Literacy (NABARD)

The institute can choose to offer any one MODULE to the groups of the students by taking into consideration the resources required and resources available inthe institute. Different group of students maybe offered different MODULE based on their choices.

INDUSTRY / EMPLOYER EXPECTED OUTCOME

Demonstrate critical social and life skills ethics, resilience, positive attitude , integrity and self-confidence at workplace and society at large.

COURSE LEVEL LEARNING OUTCOMES (COS)

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

CO1 - Enhance the ability to be fully self-aware and take challenges by overcoming all fears and insecurities and grow fully.

CO2 - Increase self-knowledge and awareness of emotional skills and emotional intelligence at the place of study/work.

CO3 - Provide the opportunity to realizing self-potential through practical experience while working individually or in group.

CO4 - Develop interpersonal skills and adopt good leadership behaviour for self-empowerment and empowerment of others.

CO5 - Set appropriate life goals with managing stress and time effectively

Course Contents

Sr. No.	MODULE	Implementation guidelines
1	**MODULE I : Activities Under Unnat Maharashtra Abhiyan (UMA)** 1.1 Introduction to Societal Needs and respective stakeholders : Regional societal issues that need engineering intervention 1.2 Multidisciplinary approach-linkages of academia, society and technology 1.3 Stakeholders' involvement 1.4 Introduction to Important secondary data sets available such as census, district economic surveys, cropping pattern, rainfall data, road network data etc 1.5 Problem Outline and stakeholders : Importance of activity and connection with	**Implementation guidelines suggested** The course will be implemented in eight sessions and fieldwork: a) Session I - Introduction to development paradigm, fieldwork and case study as pedagogy b) Session II - VII - Society, stakeholders and value creation, measurements, rudimentary analysis and reporting c) Session VIII - Final closure session feedback and assessment d) Field work - 1. Pilot Visit - Pilot of survey instrument 2. Survey Visit 1 - Data gathering /

	Mapping of system components and stakeholders (engineering / societal) 1.6 Key attributes of measurement 1.7 Various instruments used for data collection - survey templates, simple measuring equipments 1.8 Format for measurement of identified attributes/ survey form and piloting of the same 1.9 Fieldwork : Measurement and quantifications of local systems such as agriculture produce, rainfall, Road network, production in local industries, Produce /service which moves from A to B 1.10 Analysis and Report writing Report writing containing- 1. Introduction of the topic 2. Data collected in various formats such as table, pie chart, bar graph etc 3. Observations of field visits and data collected.	Information Collection 3. Survey Visit 2 - Data gathering 4. Summary Visit - Closure after analysis **Methodology:** Considering the nature of the course designed, following points shall be considered while implementing the course. i) Regroup in the batches of 5-6 students for conducting the fieldwork from the bigger group. ii) Assign a few batches of the students for this course to all the faculty members. iii) A group of course teachers will visit local governance bodies such as Municipal Corporations, Village Panchayats, Zilla Parishads, Panchayat Samitis to assess the small technological / engineering needs in their area of work. iv) The group of course teachers will carry out initial field visits to evaluate the various possibilities of field visits / various scenarios where in students can conduct field work to measure / quantify the parameters / attributes.

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