sasmira's INSTITUTE OF MAN-MADE TEXTILES

Teaching Examination Scheme

Syllabus - Scheme 2

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY

(D M T T)

(With effect from academic year 2014-15)

SASMIRA'S INSTITUTE OF MAN-MADE TEXTILES

(AN AUTONOMOUS INSTITUTION)

{Vide Govt.of Maharashtra G.R.No.EXM/1192/TE-2 Dated 6th Feb.1996}

CERTIFICATE OF APPROVAL OF THE SYLLABUS

SCHEME 2

We hereby certify that this is an PBOS & BOS approved syllabus copy of the **Diploma in Man-made Textile Technology (DMTT)** programme. This Syllabus will be applicable until any further revision is made by the Board of Studies. This syllabus will be implemented with effect from academic year 2014-2015

H.V.RAMTEKE	**G.R.ANDHORIKAR**	**MIHIR R. MEHTA**
Head of the Department	**Principal**	**Chairman**
Textile Technology		**Board of Studies**

Place : Mumbai

Date :

SASMIRA'S INSTITUTE OF MAN-MADE TEXTILES
Sasmira, Sasmira Marg, Worli, Mumbai-400 030

COURSE STRUCTURE, TEACHING & EXAMINATION SCHEME & SYLLABUS (SCHEME – 2)

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT) / DIPLOMA IN MAN-MADE TEXTILE CHEMISTRY (DMTC) AND DIPLOMA IN KNITTING TECHNOLOGY (DKT)

Implemented from Academic Year 2014-15

Guidelines for Subject Code

1. **The Program DMTT/DMTC/DKT each is divided into five levels.**

Level	Category	Code
1	Science and Humanities	SH
2	Core Technology	CT
3	Applied Technology	AT
4	Diversified Technology	DT
5	Management	MT

2. **The code for common subject, DMTT, DMTC, DKT and Non credit subject are**

Common subject	C
Textile Technology	T
Textile Chemistry	X
Knitting Technology	K
Non Credit Subject	N

3. The subject code presently used for the subject English is SHC1101.
   (a) Here "SH" represents the category Science & Humanities.
   (b) "C" represents that the subject is common for DMTT/DMTC/DKT.
   (c) The next digit "1" represents Level 1.
   (d) The next digit "1" represents Semester 1.
   (e) The last two digits "01" represent serial number of the subject.

4. We continue this coding system with simple addition of "14" signifying year of revision of curriculum. Accordingly, subject code for English is now SHC141101.

5. Another example: Existing subject code for Engineering Graphics is ATC3206. This subject belongs to Applied Technology (Level 3) and is common for DMTT/DMTC/DKT-II. The new subject code would be ATC143207.

6. Non credit subject will carry grade as A = Excellent, B = Very good, C = Good and D = Poor

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT) /
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SUMMARY SHEET OF LEVELWISE COURSE STRUCTURE
AND TEACHING & EXAMINATION SCHEME (SCHEME – 2)
SEMESTER I AND SEMESTER II

Level	Title	C	O	Teaching Scheme			Examination Scheme					Total
				L/TU	P	Total	Progressive		Final exam			
							Test	TW	TH	PR	OR	
1	Science & Humanities	12	--	32	22	54	180	600	720	200	150	1850
2	Core Technology	01	--	02	--	02	20	--	80	--	--	100
3	Applied Technology	03	--	01	03	04	--	50	--	--	--	50
4	Diversified Technology	--	--	--	--	--	--	--	--	--	--	--
5	Management Courses	--	--	--	--	--	--	--	--	--	--	--
	TOTAL			**35**	**25**	**60**	**200**	**650**	**800**	**200**	**150**	**2000**

Notation:

1. L = Lecture
2. TU = Tutorial
3. P = Practical
4. Test = Sessional Test
5. TW = Term Work
6. TH = Theory paper
7. PR = Practical Exam
8. OR = Oral Exam
9. C = Compulsory subject
10. O = Optional subject
11. * = Non credit subject

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT) /

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LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME (SCHEME – 2)

SEMESTER I AND SEMESTER II

Level - 1 SCIENCE & HUMANITIES

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
				L/ TU	P	CR	Progressive		Final exam			
							Test	TW	TH	PR	OR	
SHC 141101	English Communication	C	Nil	3/1	---	4	20	50	80	---	50	200
SHC 141102	Basic Physics	C	Nil	3/1	3	7	20	50	80	50	---	200
SHC 141103	Basic Chemistry	C	Nil	3/1	3	7	20	50	80	50	---	200
SHC 141104	Basic Mathematics	C	Nil	3/1	---	4	20	50	80	---	---	150
SHC 141105	Development of Generic & Soft Skills	C	Nil	1	2	3	---	50	---	---	50	100
SHC 141106	Workshop Technology	C	Nil	---	3	3	---	50	---	---	---	50
SHC 141107	Educational Visits	C	Nil	---	2	2	---	50	---	---	50	100
SHC 141201	Advance English Communication	C	SHC 141101	3	---	3	20	50	80	---	---	150
SHC 141202	Applied Physics	C	SHC 141102	3	3	6	20	50	80	50	---	200
SHC 141203	Applied Chemistry	C	SHC 141103	3	3	6	20	50	80	50	---	200
SHC 141204	Applied Mathematics	C	SHC 141104	3	---	3	20	50	80	---	---	150
SHC 141205	Applied Mechanics	C	Nil	3	3	6	20	50	80	---	---	150
			TOTAL	**32**	**22**	**54**	**180**	**600**	**720**	**200**	**150**	**1850**

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LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER I AND SEMESTER II

Level - 2 CORE TECHNOLOGY

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
				L/ TU	P	CR	Progressive		Final exam			
							Test	TW	TH	PR	OR	
CTC 142206	Introduction to Textile Fibres	C	Nil	2	--	2	20	--	80	--	--	100
	TOTAL			**2**	**--**	**2**	**20**	**--**	**80**	**--**	--	**100**

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT) /
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LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER I AND SEMESTER II

Level - 3 APPLIED TECHNOLOGY

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
							Progressive		Final exam			
				L/ TU	P	CR	Test	TW	TH	PR	OR	
ATN 143108	Web Based Presentation-I	C	Nil	--	2*	--	--	--	--	--	--	--
ATC 143207	Engineering Graphics	C	Nil	1	3	4	--	50	--	--	--	50
ATN 143208	Web Based Presentation-II	C	ATN 143108	--	2*	--	--	--	--	--	--	--
	TOTAL			**1**	**3**	**4**	**--**	**50**	--	--	--	**50**

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT) /
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LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER I AND SEMESTER II

Level - 4 DIVERSIFIED TECHNOLOGY

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
				L/ TU	P	CR	Progressive		Final exam			
							Test	TW	TH	PR	OR	
--	--	--	--	--	--	--	--	--	--	--	--	--
	TOTAL			--	--	--	--	--	--	--	--	--

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT) /
DIPLOMA IN MAN-MADE TEXTILE CHEMISTRY (DMTC) AND
DIPLOMA IN KNITTING TECHNOLOGY (DKT)

LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER I AND SEMESTER II

Level - 5 MANAGEMENT COURSES

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
				L/ TU	P	CR	Progressive		Final exam			
							Test	TW	TH	PR	OR	
--	--	--	--	--	--	--	--	--	--	--	--	--
	TOTAL			--	--	--	--	--	--	--	--	--

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT) /
DIPLOMA IN MAN-MADE TEXTILE CHEMISTRY (DMTC) AND
DIPLOMA IN KNITTING TECHNOLOGY (DKT)

SEMESTERWISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME
(SCHEME – 2)
SEMESTER I AND SEMESTER – II

Semester	No. of Theory Papers	C	O	Teaching Scheme			Examination Scheme					
				L & TU	P	CR	Progressive		Final exam			Total
							Test	TW	TH	PR	OR	
Semester-1	04	08	--	17	13	30	80	350	320	100	150	1000
Semester-2	06	08	--	18	12	30	120	300	480	100	---	1000
TOTAL	**10**	**16**	**--**	**35**	**25**	**60**	**200**	**650**	**800**	**200**	**150**	**2000**

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TEACHING AND EXAMINATION SCHEME

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/DIPLOMA IN MAN-MADE TEXTILE CHEMISTRY/DIPLOMA IN KNITTING TECHNOLOGY
(DMTT/DMTC/DKT)

SEMESTER-I

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
							Progressive		Final exam			
				L/T	PR	CR	Test	TW	TH	PR	OR	
SHC 141101	English Communication	C	Nil	3/1	---	4	20	50	80	---	50	200
SHC 141102	Basic Physics	C	Nil	3/1	3	7	20	50	80	50	---	200
SHC 141103	Basic Chemistry	C	Nil	3/1	3	7	20	50	80	50	---	200
SHC 141104	Basic Mathematics	C	Nil	3/1	---	4	20	50	80	---	---	150
SHC 141105	Development of Generic & Soft Skills	C	Nil	1/-	2	3	---	50	---	---	50	100
SHC 141106	Workshop Technology	C	Nil	---	3	3	---	50	---	---	---	50
SHC 141107	Educational Visits	C	Nil	---	2	2	---	50	---	---	50	100
ATN 143108	Web Based Presentation-I	C	Nil	---	2*	---	---	---	---	---	---	---
	TOTAL			17	13	30	80	350	320	100	150	1000

*Non Credit Subject

Course : DMTT/DMTC/DKT

Semester : FIRST

Subject Title : English Communication

Subject Code : SHC141101

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	OR	TW	TOTAL
03/01	--	04	03	80	20	50	50	200

RATIONALE

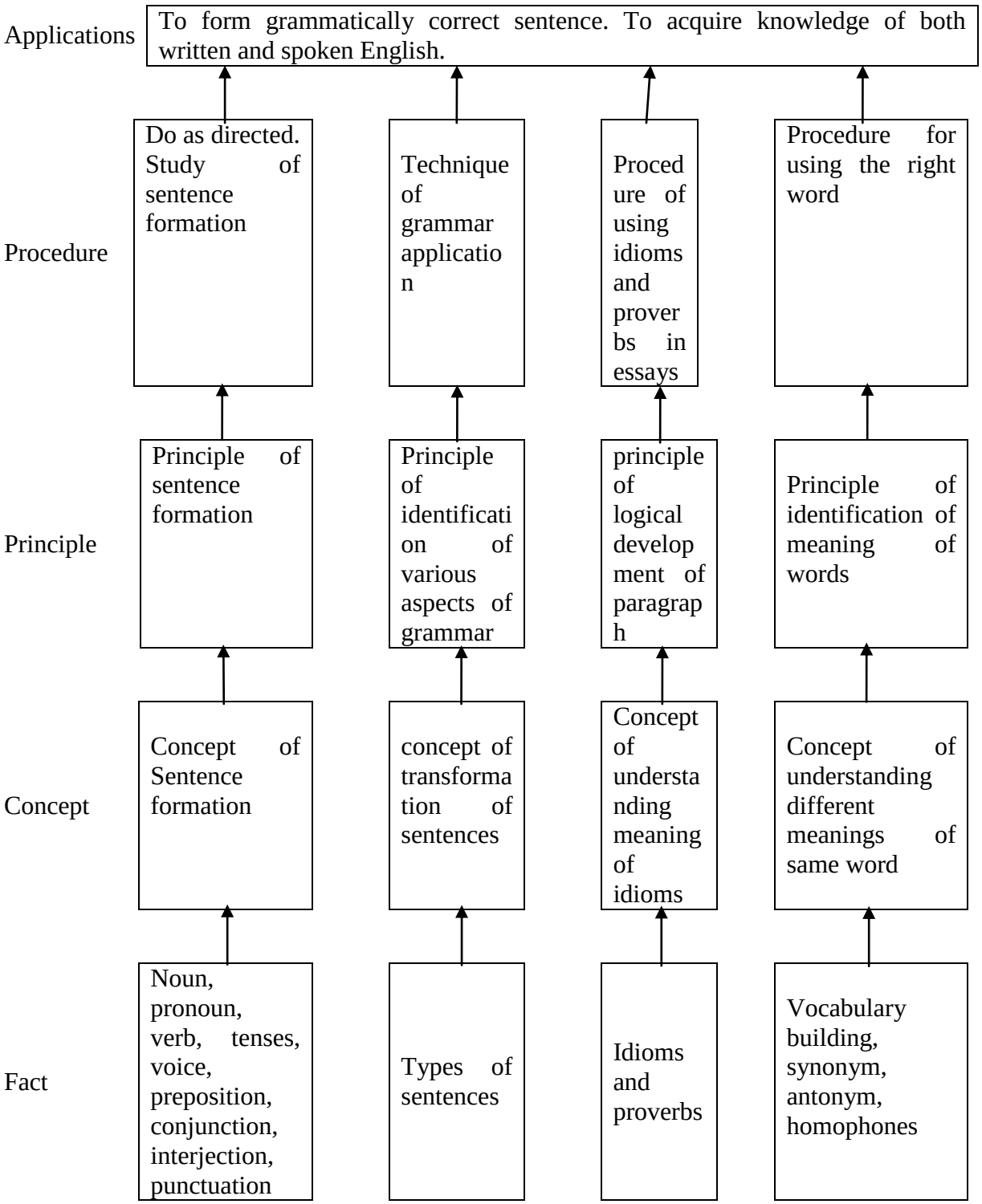
The most commonly used medium to express oneself is language. English being a global language is used in all the spheres of human life i.e. personal, professional and social. A diploma student is expected to be proficient in English language and pursue the existing course of study to handle the future jobs. The content of the text includes the aspects related to language skills.

General Objectives:

Students will be able to

1 Develop vocabulary.
2 Apply the rules of grammar.
3 Comprehend the given unseen passage.

English Communication Learning Structure:



SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Basic Grammar and Its Applications:** 1.1 **Noun:** Common noun, proper noun, collective noun, abstract noun, material noun. 1.2 **Pronoun:** Demonstrative, interrogative etc. 1.3 **Verbs:** Transitive verb, intransitive verb. 1.4 **Adverbs:** Different types of adverbs. 1.5 **Tenses:** Past, present and future and its different types. 1.6 **Active and Passive Voice:** Use of active and passive voice. 1.7 **Direct and Indirect Sentences:** Conversion of direct into indirect sentence and vice versa. 1.8 **Articles**: Appropriate use of articles. 1.9 **Prepositions:** To use correct prepositions as per context. 1.10 **Conjunctions:** Coordinating and sub-ordinating conjunctions.	12	20
2	**Study of Sentence Formation:** 2.1 **Sentences**: Identify the type of sentences. 2.2 **Transformation:** Conversion of sentences from simple to compound, simple to complex etc. 2.3 **Correction**: Correct the errors from the sentences, punctuation.	04	08
3	**Understanding Grammar:** 3.1 Words, Phrases 3.2 Idioms and Proverbs.	08	12
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
4	**Vocabulary Building:** 4.1 Synonyms and Antonyms. 4.2 Homophones. 4.3 Words often confused.	08	14
5	**Comprehension:** 5.1 Comprehending questions and writing the answers on unseen passages.	06	12
6	**Essay and Story Writing:** 6.1 Writing stories from hints. 6.2 Writing essays based on phrases, science. 6.3 Dialogue writing based on various situations.	10	14
	TOTAL	24	40

Assignments:

Term Work consists of the following assignments:

1. Punctuate 25 sentences given by the teacher.
2. Write 15 synonyms, 15 antonyms and 15 homophones.
3. Identify the verbs, nouns, adverbs, pronouns from the given sentences.
4. Write 10 idioms and proverbs.
5. Do as directed 10 examples from each type.
6. Essay writing.
7. Story writing.
8. Comprehension.
9. Dialogue writing.
10. Precise writing/dictation.

Note: For Term Work

1. **Assignments should be solved in separate A-4 size journal.**
2. **Assignments will be assessed progressively and Term Work marks will be allocated based on these assessments.**
3. **An oral exam of 50 marks will be conducted at the end of the semester.**

Learning Resources:

Sr. No.	Title	Author	Publisher
1	MSBTE Textbook	MSBTE	MSBTE
2	High school English Grammar and Composition	Wren and Martin	S. Chand & Co.
3	English	B. V. Phatak	Nirali Prakashan

Course : DMTT/DMTC/DKT

Semester : FIRST

Subject Title : Basic Physics

Subject Code : SHC141102

Teaching and Examination Scheme:

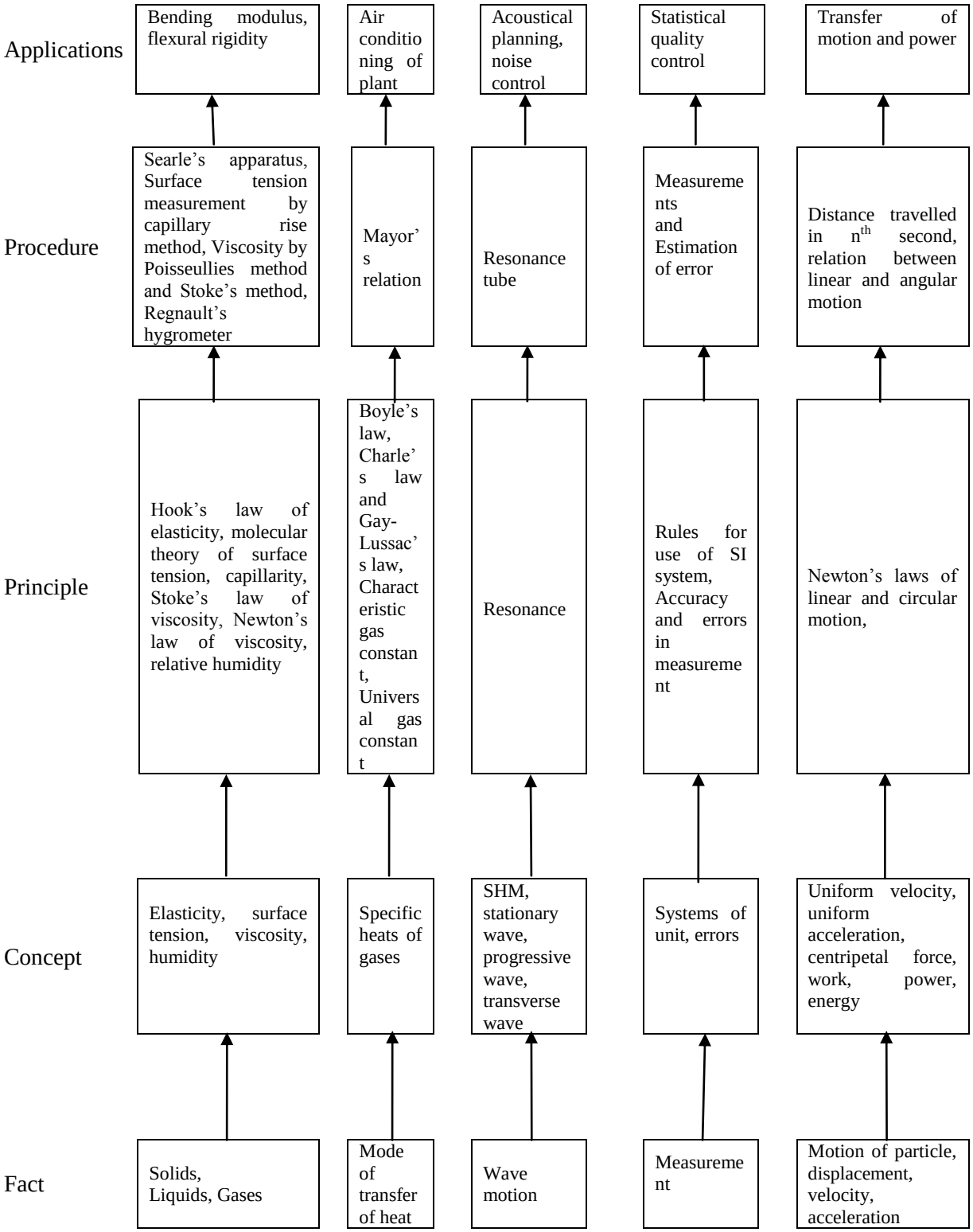
Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03/01	03	07	03	80	20	50	50	200

RATIONALE

Physics is a branch of science characterized by fundamental laws, principles, accurate instrumentation and precision of measurement and expression of its result in mathematical terms to streamline engineering knowledge.

This subject develops the basic concepts in the areas relevant to textiles. Physics plays vital role in helping to measure, analyze, and predict the behaviour of a whole lot of raw material and immediate product during processing under different conditions. The study of this subject imparts necessary knowledge and skill in the area of textiles.

Basic Physics Learning Structure:



Basic Physics Theory:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Units & Measurements:** 1.1 Fundamental and derived physical quantity, CGS-MKS-FPS & SI system of units, Rules for use of SI system, advantages of SI system. 1.2 Accuracy and errors in measurement, types of errors—gross error, systematic error, random error. Method to minimize error. Estimation of error—average value, absolute error, average absolute error, relative error and percentage error.	06	10
2	**Vector** 2.1 Scalar and vector. Representation of a vector. Resultant vector. 2.2 Triangle law of vectors, polygon law of vectors and parallelogram law of vectors. 2.3 Resolution of a vector. Unit vector. Rectangular components of a vector. 2.4 Scalar product of two vectors. Numerical examples.	04	04
3	**Elasticity:** 3.1 Definition of elasticity, deforming force, restoring force, elasticity. 3.2 Stresses: Tensile, Bulk and Shear Stress. Strain: Tensile, Bulk and Shear Strain. 3.3 Elastic limit, Hook's law. 3.4 Elastic coefficients:- Young's modulus, Bulk modulus and modulus of rigidity. Determination of Young's modulus by using Searle's apparatus. 3.5 Stress-strain diagram, behaviour of wire under continuously increasing load, yield point, ultimate stress, breaking stress, factor of safety. 3.6 Work done in stretching a wire and energy stored per unit volume of wire. Numerical examples.	06	10
4	**Surface Tension:** 4.1 Cohesive and adhesive force, Molecular theory of surface tension, Surface tension definition and unit. 4.2 Angle of contact, capillarity and examples of capillary action, derivation of expression for surface tension by capillary rise method, examples of surface tension, and applications of surface tension. 4.3 Surface tension and surface energy. The relation T = E/A. Numerical examples.	04	08
5	**Viscosity:** 5.1 Definition of viscosity, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its CGS & SI unit 5.2 Determination of viscosity by Poisseullies method (No derivation) 5.3 Stoke's law of viscosity, concept of terminal velocity, determination of coefficient of viscosity by Stoke's method. Numerical examples.	04	08
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
6	**Gas Laws and Specific Heats of Gases:** 6.1 Boyle's law, Charle's law and Gay-Lussac's law (statement and mathematical equation only) 6.2 Absolute zero and absolute scale of temperature. 6.3 General gas equation, universal gas equation, universal gas constant. 6.4 Specific heat of gas at constant volume (C_v) and at constant pressure (C_p), ratio of specific heats, Mayors relation between C_p and C_v. Why C_p is greater than C_v. Numerical examples.	06	10
7	**Hygrometry:** 7.1 Definition of hygrometry, Dew point or dew temperature. 7.2 Absolute humidity, specific humidity and relative humidity. 7.3 Dry and wet bulb hygrometer, Regnault's hygrometer working and determination of humidity, chemical hygrometer. 7.4 Applications of humidity in textiles. Numerical examples.	06	10
8	**Wave Motion:** 8.1 Definition of wave, wave motion, wave velocity, wave period, wave frequency, wave length, amplitude, derivation of $v = n\lambda$. 8.2 Simple Harmonic Motion, examples of SHM, equation of SHM, expression for velocity and acceleration of body executing SHM. 8.3 Types of progressive wave, transverse and longitudinal wave, comparison between the two waves. 8.4 Resonance: Stationary waves, formation of stationary wave, examples of stationary wave, free and forced vibrations with examples, resonance, examples of resonance, formula to calculate velocity of sound by resonance tube method. Numerical examples.	09	14
9	**Acoustics:** 9.1 Echo, reverberation and reverberation time. 9.2 Sabine's formula for reverberation time (derivation not necessary). 9.3 Requirements of good acoustics for an auditorium. 9.4 Sound absorption using textile materials. Numerical examples.	03	06
	TOTAL	24	40

Basic Physics Practical:
The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B

Group A: List of Experiments:

1	Introduction
2	Measure dimensions of given objects using vernier calliper
3	Measure dimensions of given objects using micrometer screw gauge
4	Determine Young's modulus of elasticity of metal wire by using Searle's apparatus
5	Determine surface tension of given liquid by capillary rise method using travelling microscope
6	Determine viscosity of given liquid by Poisseullies method
7	Determine viscosity of given liquid by Stoke's method
8	Determine velocity of sound in air by using resonance tube
9	Determine %R.H. by using Regnault's hygrometer
10	Verify Boyle's law
11	Determination of acceleration due to gravity by using simple pendulum

Group B: Solutions to the Assignments given in class.

Assignment Number	Topic
1	Units and Measurements
2	Vector
3	Elasticity
4	Surface Tension
5	Viscosity
6	Gas Laws
7	Specific Heats of Gases
8	Hygrometry
9	Wave Motion
10	Acoustics

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	Applied Physics	B. G. Bhandarkar	Vrinda Publication
2	Engineering Physics	R. K. Gaur & S. L. Gupta	Dhanpat Rai & Sons, Delhi
3	A Textbook of Engineering Physics	B. L. Theraja	S. Chand Publishers, New Delhi
4	Engineering Physics	V. Rajendran	Tata McGraw Hill Publication
5	Conceptual Physics	P. G. Hewitt	Pearson Education (10^{th} Edition)
6	Physics Std – XI & XII	---	HSC Board/CBSE Board
7	Fundamentals of Physics	Resnick, Halliday & Walker	Wisley Toppan Publishers
8	Physics Std –XI	Ashok B. Babar & Yogesh Babar	Reliable Publications
9	Physics Part I & II Std –XII	Ashok B. Babar & Yogesh Babar	Reliable Publications
10	Applied Physics	Prof. Manikpure	S. Chand Publication

Course : DMTT/DMTC/DKT

Semester : FIRST

Subject Title : Basic Chemistry

Subject Code : SHC141103

Teaching and Examination Scheme:

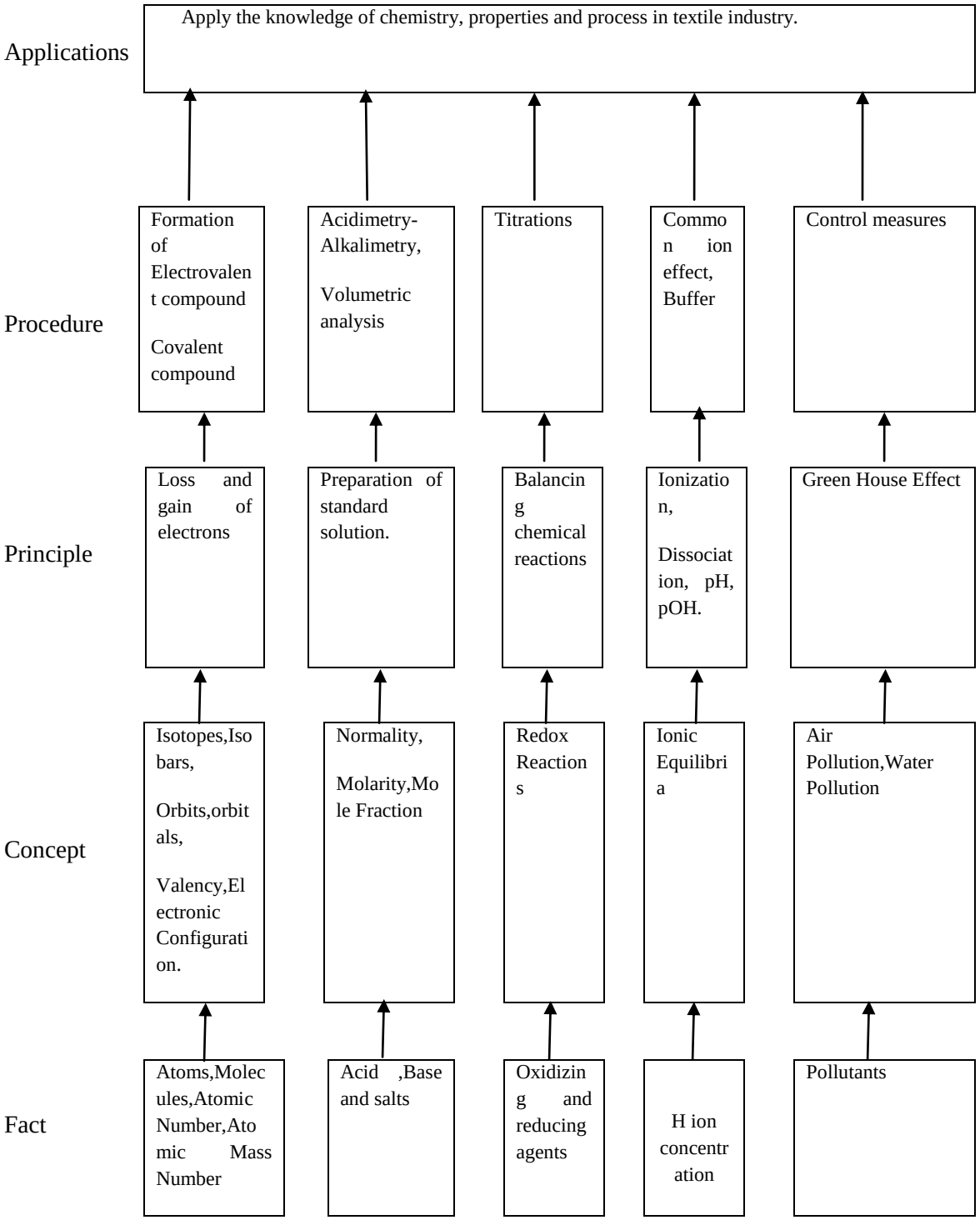
Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	Paper HRS	TH	Test	Practical	OR	TW	TOTAL
03/01	03	07	03	80	20	50	---	50	200

Rationale:-

Chemistry is a basic science subject which is essential to all engineering courses. It gives knowledge and develops orientation about why and how structural changes occur in chemicals .It correlates the structure of categorized chemicals with their utility in generating and maintaining textile processing parameters and conditions.

Due to technical hazards there are hazardous effects on environment and human life. The knowledge of environment effects will bring awareness in students about the preventions to be taken to reduce the bad effects.

Basic Chemistry Learning Structure



Basic Chemistry Theory:-

SECTION –I

Topic No.	Contents	Hours	Marks
1	**Calibration of Measuring apparatus and instruments**:- 1.1 Introduction 1.2 Need for calibration 1.3 Procedure for calibration of - Burette, Pipette, conical flask, volumetric flasks, weighing balance pH meter. Conductometer.	03	07
2	**Atomic Structure :** 2.1 Introduction, Fundamental particles of an atom. 2.2 Definition of Atomic Number, Atomic mass number, and relation between them, Isotopes and Isobars. Definition, distinction and suitable examples. 2.3 Orbit and Orbital - Definitions and shapes of different orbitals. 2.4 Quantum Numbers. 2.5 Pauli's Exclusion Principle, Hund's Rule, Aufbau's principle, Electronic configuration of elements up to atomic number 20.	04	06
3	**Formation of Molecules**: 3.1 Concept of valency, 3.2 Electronic Theory of valency. . 3.3 Types of valency:-Electrovalency (eg NaCl, $CaCl_2$) Co-valency (eg Chlorine molecule, Ammonia molecule, water molecule, oxygen molecule,) 3.4.Difference between Electrovalent compounds and Covalent compounds)	02	04
4	**Atomic Weight, Molecular Weight& Equivalent Weight:-** 4.1. Definitions. 4.2. Dulong-Petit's law, difference between atoms and molecules, 4.3. Molecular weight, molecular and empirical formula & empirical formula weight. 4.4 Numericals on empirical formula and molecular formula.	03	06
5	**Concentration of Solution:-** 5.1 Ways of expressing concentration of solution - Normality, Molarity, Molality, Mole fraction, % Composition, Strength of solution, Standard solution, types of standard solution and preparation of standard solution. 5.2 Acidimetry-Alkalimetry, Role of indicators, Types of Titrations and suitable examples. 5.3 Hydrolysis of salt- sodium acetate, sodium chloride.	04	06

6	**Ionic Equilibrium:-** 6.1 Concepts of acid-base, Electrolysis-electrolytes-strong and weak electrolytes with definition and examples. 6.2 Arrhenius theory of electrolytic dissociation. 6.3 Degree of ionization, ionization of water, dissociation constant 6.4 H-ion concentration, pH and pOH, Numericals, pH scale - importance and applications. 6.5 Common ion effect-definition and examples, Buffer solution – types and examples.	04	05
7	**Chemical Reactions:-** 7.1 Reactant and product – definition and examples 7.2 Redox Reactions – oxidation, reduction, oxidizing and reducing agents, explanation with examples. 7.3 Reversible and irreversible reactions 7.4 Exothermic and endothermic reactions 7.5 Neutralization and condensation reaction. Examples and explanation.	04	06
	Total	**24**	**40**

Section II

Topic No.	Contents	Hours	Marks
8	**Laws of Chemical Combination-** 8.1 Physical and Chemical Change 8.2 Law of Conservation of mass, Reciprocal and multiple proportions.	02	04
9	**Alkali metals and IA group:-** 9.1 Introduction, General characteristics, 9.2 Trends in electro negativity, reactivity, Boiling Point, Melting Point. 9.3 Reactions of sodium and potassium with air, water, hydrogen, acids, ammonia.	04	06
10	**Chemical reactions and uses of inorganic salts in Textiles:-** Aluminium Potassium Sulphate, Magnesium Sulphate, Sodium Nitrite, Sodium Hypochlorite , Sodium Sulphide, Sodium Sulphite, Sodium Nitrate, Sodium per sulphate, Potassium Dichromate, Sodium Carbonate, sodium metabisulphite, sodium thiosulphate and sodium perborate.	03	06
11	**Applications of oxidizing and reducing agents in textiles:-** Molecular Formulae, Chemical properties and applications in textiles - Bleaching Powder, Hydrogen Peroxide, Sodium hypochloride, Sodium chloride, Potassium permanganate, Sodium hydrosulphite and Sodium sulphide.	04	06

12	**Acids - sulphuric and hydrochloric acid:-** Molecular formulae, uses, chemical reactions – 12.1 Sulphuric Acid with Ferrous Sulphate, Sugar, Salt and Potassium Nitrate. 12.2 Hydrochloric Acid with Barium peroxide, Strong alkali and weak alkali.	04	06
13	**Gaseous Diffusion Laws:-** 13.1 Avogadro's Law – statement, explanation and applications. 13.2 Definitions –atomicity, absolute density, vapour density. 13.3 Derivation for : Molecular Weight = 2 x Vapour density. 13.4 Mole concept and introduction of Avogadro's Number. 13.5 Daltons Law of Partial Pressure – statement and explanation. 13.6 Grahams Law of Diffusions statement and explanation. 13.7 Numericals.	04	07
14	**Environment Effects:-** 14.1 Definition of pollution and pollutant, 14.2 Types of pollutant, and pollution – air and water. 14.3 Causes of pollution. 14.4 Effects and control measures of air and water pollution. 14.5 Green House Effect.	03	05
	Total	**24**	**40**

The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B

Group A: List of Experiments: Basic Chemistry Practical:

1	Introduction
2	To determine the normality and strength of Sulphuric acid by using 0.1N NaOH.
3	To determine the normality and strength of sodium carbonate by using 0.1N HCl.
4	To determine the normality and strength of oxalic acid by using 0.1 N NaOH.
5	To determine the normality and strength of Ferrous Ammonium sulphate using 0.1N potassium permanganate
6	To determine the strength of supplied iodine solution using sodium thiosulphate as an intermediate.
7	To determine strength of supplied potassium dichromate solution using sodium thiosulphate as an intermediate solution.
8	Inorganic Salt Analysis:- Sodium Chloride, Lead Nitrate
9	Inorganic Salt Analysis:- Aluminum Sulphate, Magnesium Sulphate
10	Inorganic Salt Analysis:- Sodium Carbonate, Potassium Carbonate
11	Inorganic Salt Analysis: - Potassium Iodide, Ferrous Sulphate.

Group B: Solutions to the Assignments given in class.

Assignment Number	Topic
1	Calibration of instruments
2	Structure of atom and formation of molecules
3	Atomic Weight, Molecular Weight& Equivalent Weight, concentration of solution
4	Ionic equilibrium and Chemical Reactions
5	Laws of chemical combination and alkali metals.
6	Inorganic salts in textiles
7	Oxidizing and reducing agents
8	Acids
9	Gaseous diffusion
10	Environmental Pollution

REFERENCES:-

Sr. No.	Name of Book	Author	Publisher
1	Modern Chemistry, Std XI	P. P. Singh, J. K. Bhambhani & others.	Himalaya Publishing House
2	Modern Chemistry, Std XII	P. P. Singh, J. K. Bhambhani & others.	Himalaya Publishing House
3	Fundamental Chemistry, Std XI	M. M. Thatte & B. R. Pandit.	Nirali Prakashan
4	Fundamental Chemistry, Std XII	M. M. Thatte & B. R. Pandit.	Nirali Prakashan
5	Chemistry, Std XI	Dr. L. H. Gadgil, Dr. S. P. Pathak & others.	Narendra Prakashan, Pune
6	Inorganic Chemistry	P. L Soni	S. Chand & Co.
7	Inorganic Chemistry	Madan Malik & Tuli	S. Chand & Co.

Course : DMTT/DMTC/DKT

Semester : FIRST

Subject Title : Basic Mathematics

Subject Code : SHC141104

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03/01	--	04	03	80	20	--	50	150

RATIONALE

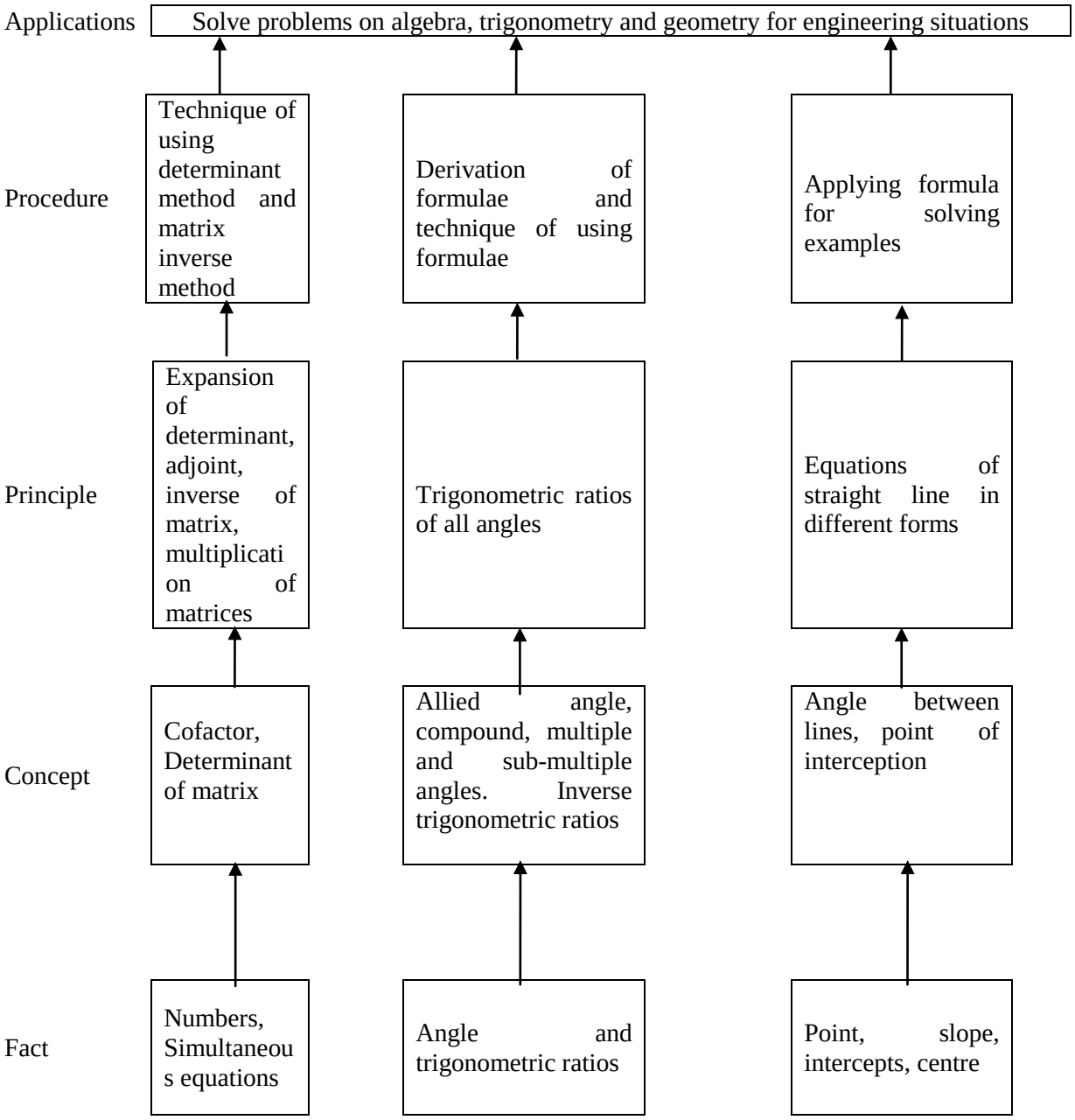
Mathematics is the foundation of science and technology. The subject intends to teach students basic facts, concepts, principle and procedure of mathematics as a tool to analyze Engineering problems and as such lays down foundation for understanding the engineering and core technology subjects.

General Objective:

Student will be able to:

1. Apply Crmer's Rule and matrix method to solve simultaneous equations in three variables.
2. Use concept of allied angle, compound angle, multiple angle and sub-multiple angles to solve engineering problems.
3. Use factorization and de-factorization formulae to solve examples.
4. Understand the relationship of two variables.

Basic Mathematics Learning Structure:



Basic Mathematics Theory:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Determinant:** 1.1 Definition and expansion of determinant of order 3. 1.2 Cramer's rule to solve simultaneous equations in three variables.	04	06
2	**Matrices:** 2.1 Definition of a matrix of order m x n and types of matrices. 2.2 Algebra of matrices with properties and examples. 2.3 Transpose of a matrix with properties. 2.4 Cofactor of an element of a matrix. 2.5 Adjoint of a matrix and inverse of matrix by adjoint method. 2.6 Solution of simultaneous equations containing two and three unknowns by matrix method.	06	10
3	**Straight Line:** 3.1 Angle between two lines with proof. Simple examples. 3.2 Condition of parallel and perpendicular lines. 3.3 Point of intersection of two lines, equation of line passing through point of intersection with given condition. 3.4 Perpendicular distance between point and line with simple examples. 3.5 Distance between two parallel lines with simple examples.	08	12
4	**Circle:** 4.1 Definition of circle, cords, tangent & normal. 4.2 Standard equation of circle, Centre radius form. 4.3 General equation of a circle. 4.4 Chord of a circle, Diameter form. 4.5 Tangent and normal of a circle.	06	12
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
5	**Trigonometric ratios of allied, compound, multiple and sub-multiple angles** 5.1 Trigonometric ratios of any angle. 5.2 Definition of allied angle, compound angle, multiple and sub-multiple angles. Trigonometric ratios of these angles with proofs. Simple examples.	12	16
6	**Factorization and de-factorization formula:** 6.1 Formulae for factorization and de-factorization with proof and examples.	06	12
7	**Inverse Trigonometric Ratios:** 7.1 Definition of Inverse trigonometric ratios. 7.2 Principal value of inverse trigonometric ratio. 7.3 Relation between inverse trigonometric ratios with proof and simple examples.	06	12
	TOTAL	24	40

Tutorials:

Note: 1) **The Term Work consists of solutions to Assignments given in class on various topics.**
2) Make a group of 20 students and for each group minimum 10 problems are to be given.
3) Tutorial problems are to be solved in A-4 size journal and should be continuously assessed.

List of Tutorials:

Sr. No.	Topic for Tutorial
1	Determinant
2	Matrices (Algebra of matrices)
3	Matrices (Adjoint, inverse and solutions of equations using matrix inversion method)
4	Straight lines
5	Circle
6	Trigonometric ratios of allied angles
7	Trigonometric ratios of compound angles
8	Trigonometric ratios of multiple and sub-multiple angles
9	Factorization and de-factorization
10	Inverse trigonometric ratios

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	Mathematics for Polytechnic	S. P. Deshpande	Pune Vidyarthi Griha
2	Plane Trigonometry – I & II	S. L. Loney	S. Chand Publication
3	Matrices	Ayres	Schaum series McGraw Hill
4	Higher Engineering Mathematics	B. S. Grewal	Khanna Publication
5	Engineering Mathematics	S. S. Sastry	Prentice Hall of India

Course : DMTT/DMTC/DKT

Semester : FIRST

Subject Title : Development of Generic & Soft Skills

Subject Code : SHC141105

Teaching and Examination Scheme:

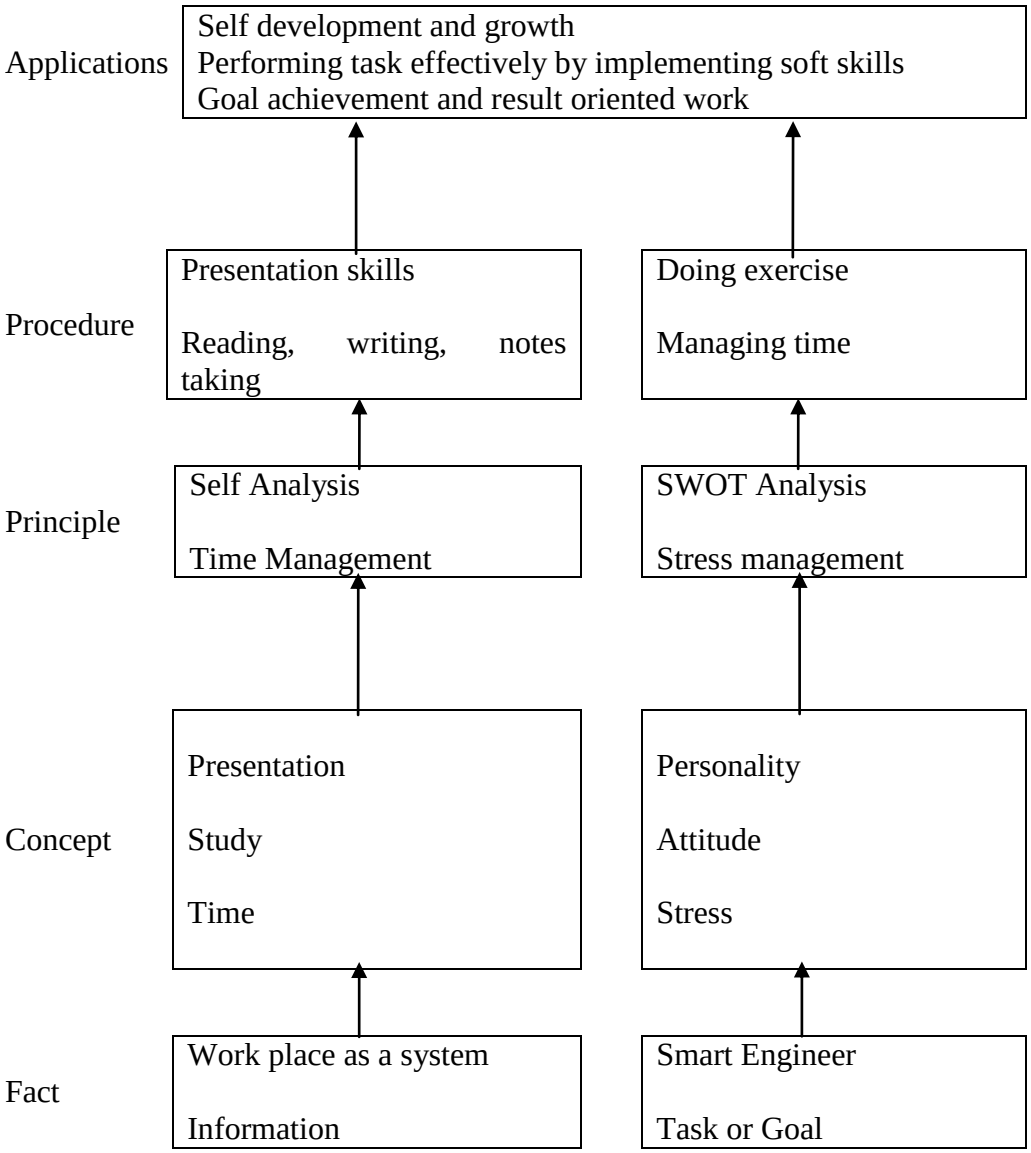
Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	OR	TW	TOTAL
01/--	02	03	--	--	--	--	50	50	100

RATIONALE

Globalization has emphasized the need for overall development of technician to survive in modern era. Soft skill development plays a key role in enhancing his employability along with technical knowledge.

Through this subject students will be introduced to the various soft skills and its application in day to day life so that whenever it is necessary they can utilize their skills throughout the life.

Development of Generic & Soft Skills Learning Structure:



Topic No.	Content	Hours
1	**Self Analysis** 1.1 Need of self analysis. 1.2 Attitude and types: positive, negative, optimistic and pessimistic.	01
2	**Memory and Cognition** 2.1 Working Memory (WM). 2.2 Long Term Memory (LTM), and short term memory 2.3 Organization of Knowledge	01
3	**Self Development** 3.1 Introduction and areas of self development. 3.2 **Areas of self development with respect to** **(a) Time** Introduction, The process of time planning, How to plan your time, Time Management, Ways to get the most out of time management, Case Study/Exercise. **(b) Stress** Introduction, Stress physiology & health, Coping styles or strategies, Counteracting stress, Stress and Yoga. **(c) Health** Introduction, Health-Food, Exercise, Rest, Body-Observation, protection, Dietary guidelines & Addictions **(d) Emotion** Introduction, Emotional stability and self control. **(e) Ethics** Introduction, Basic of ethics, Individual and ethics-issues & Code of ethics.	04
4	**Motivation and Goal Setting** 4.1 Introduction, Theories of Motivation, Self Motivation. 4.2 Goal setting and its importance. 4.3 Characteristics of goal setting (SMART-specific, measurable, attainable, realistic and time-bound)	01
5	**Study Techniques** 5.1 Learning strategies, learning process. 5.2 Reading skills, listening skills. 5.3 Notes taking. 5.4 Sources of information and Information search (library, internet etc).	01
6	**Task Management** 6.1 Introduction to Task Management. 6.2 Task Identification, Task characteristics. 6.3 Task Customer: Introduction, Customer, Customer need and requirement, Customer satisfaction, Documentation 6.4 Task Planning: Introduction, Preparation of task plan, Task plan. 6.5 Task execution and control: Introduction, Task baseline, Methodology to perform task and monitoring tools, Task control & Task status against baseline. 6.7 Closing the task: Introduction, Task summary & conclusion & Task evaluation and feedback	04

7	**Learning on Job** 7.1 Introduction, Definition, Identifying general and specific skills. 7.2 Workplace as a system & Types of system. 7.3 Learning practical skills: Introduction, Process of performing on the job, Domains of learning on the job. 7.4 Testing of acquired skills: Introduction, objectives, process for skill analysis.	04
	Total	16

Note: For Term Work

1. **Assignments should be solved in separate A-4 size journal.**
2. **Assignments will be assessed progressively and Term Work marks will be allocated based on these assessments.**

- **Oral Examination of 50 marks will be held at the end of Semester.**

Reference

Sr. no.	Name of Book	Author	Publication
1	Target setting and goal achievement	Richard Hale, Peter Whitlam	Kogan Page
2	Successful Presentation Skills	Andrew Bradbury	The Sunday Times—Kogan
3	Effective Presentation	Ross Jay and Antony Jay	Pearson—Prentice Hall
4	Personality Development and Soft Skills	Barak K. Mitra	Oxford University Press
5	Effective Communication and Soft Skills	Nitin Bhatnagar and Mamta Bhatnagar	Pearson

Course : DMTT/DMTC/DKT

Semester : FIRST

Subject Title : Workshop Technology

Subject Code : SHC141106

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
--	03	03	--	--	--	--	50	50

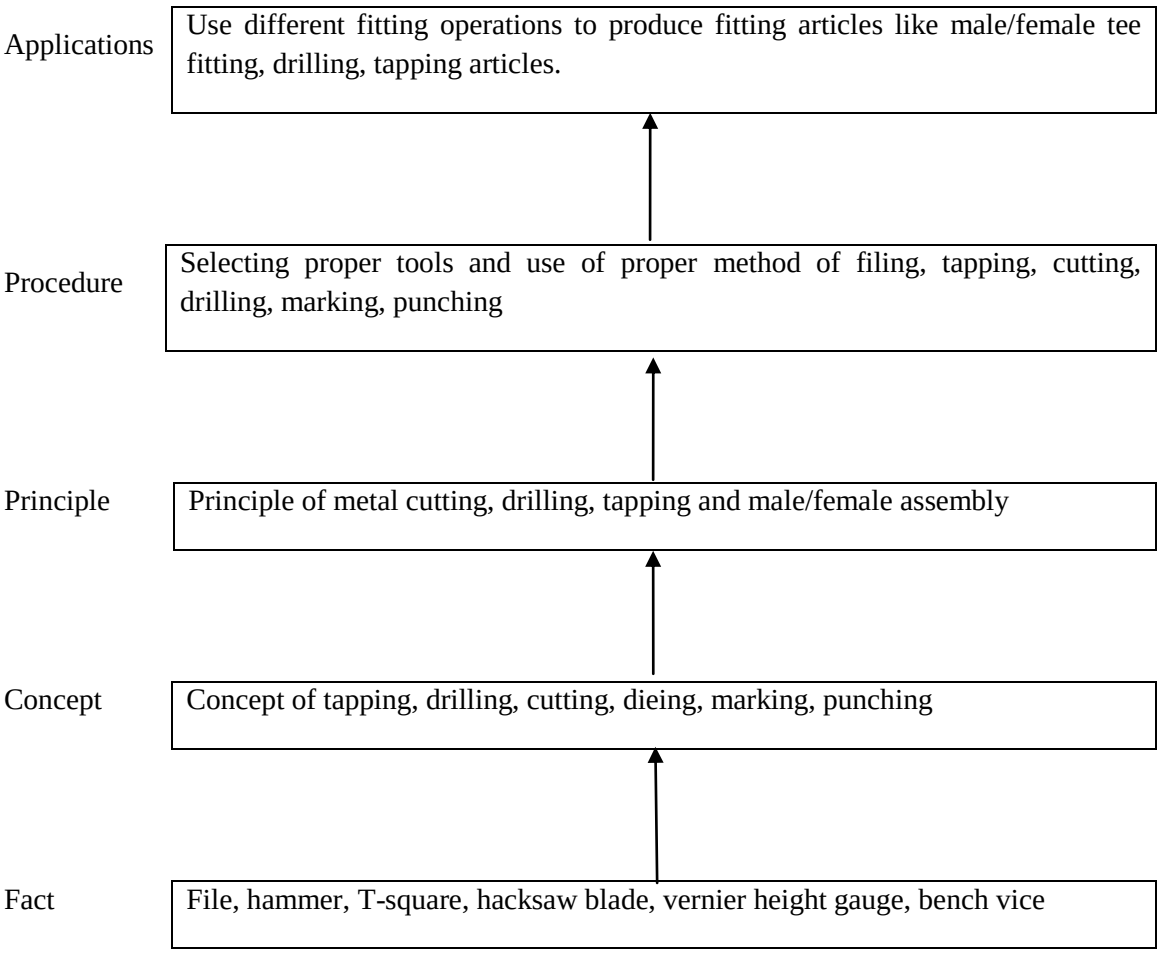
RATIONALE

Diploma Engineer is expected to develop basic workshop skills in carpentry, welding, fitting and smithy operations.

Students are required to identify, select and use different kinds of tools such as marking, measuring, cutting, supporting, striking and various holding devices.

This subject enables students to use knowledge of basic workshop practices in preparing composite jobs.

Workshop Technology Learning Structure:



WORKSHOP TECHNOLOGY

Topic No.	Content	Practical Hours
1	**Carpentry:** 1.1 Introduction to the carpentry, carpentry tools and equipments. 1.2 Various carpentry joints. 1.3 Carpentry processes like marking, sawing, planning, grooving etc.	24
2	**Fitting:** 2.1 Introduction to the bench work & fitting shop. 2.2 Various tools such as vices, files , hammers, steels rule, Surface gauge, Surface plates , angle plates, punch, V block, Drilling machine, measuring instruments like vernier callipar, audleg caliper 2.3 Various fitting process such as filling, marking, sawing, drilling, tapping, deing , finishing etc .	24
	TOTAL	48

Term Work

The Term Work consists of:

1. Two carpentry jobs in carpentry joints.
2. Two fitting jobs which include processes like marking, filing, sawing, drilling and tapping.

REFERENCES

Sr. No.	Name of Book	Author
1	Elements of Workshop Technology Volume – I & II	S.K.H. Choudhary & S. K. Bose
2	Workshop Technology Part - I, II & III	W. A. J. Chapman

SASMIRA'S INSTITUTE OF MAN-MADE TEXTILES
Sasmira, Sasmira Marg, Worli, Mumbai-400 030

TEACHING AND EXAMINATION SCHEME

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/DIPLOMA IN MAN-MADE TEXTILE CHEMISTRY/DIPLOMA IN KNITTING TECHNOLOGY
(DMTT/DMTC/DKT)

SEMESTER-II

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
							Progressive		Final exam			
				L	PR	CR	Test	TW	TH	PR	OR	
SHC 141201	Advance English Communication	C	SHC 141101	3	---	3	20	50	80	---	---	150
SHC 141202	Applied Physics	C	SHC 141102	3	3	6	20	50	80	50	---	200
SHC 141203	Applied Chemistry	C	SHC 141103	3	3	6	20	50	80	50	---	200
SHC 141204	Applied Mathematics	C	SHC 141104	3	---	3	20	50	80	---	---	150
SHC 141205	Applied Mechanics	C	Nil	3	3	6	20	50	80	---	---	150
CTC 142206	Introduction to Textile Fibres	C	Nil	2	---	2	20	---	80	---	---	100
ATC 143207	Engineering Graphics	C	Nil	1	3	4	---	50	---	---	---	50
ATN 143208	Web Based Presentation-II	C	ATN 143108	---	2*	---	---	---	---	---	---	---
	TOTAL			18	12	30	120	300	480	100	00	1000

*Non Credit Subject

Course : DMTT/DMTC/DKT

Semester : SECOND

Subject Title : Advance English Communication

Subject Code : SHC141201

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03/--	--	03	03	80	20	--	50	150

Rationale

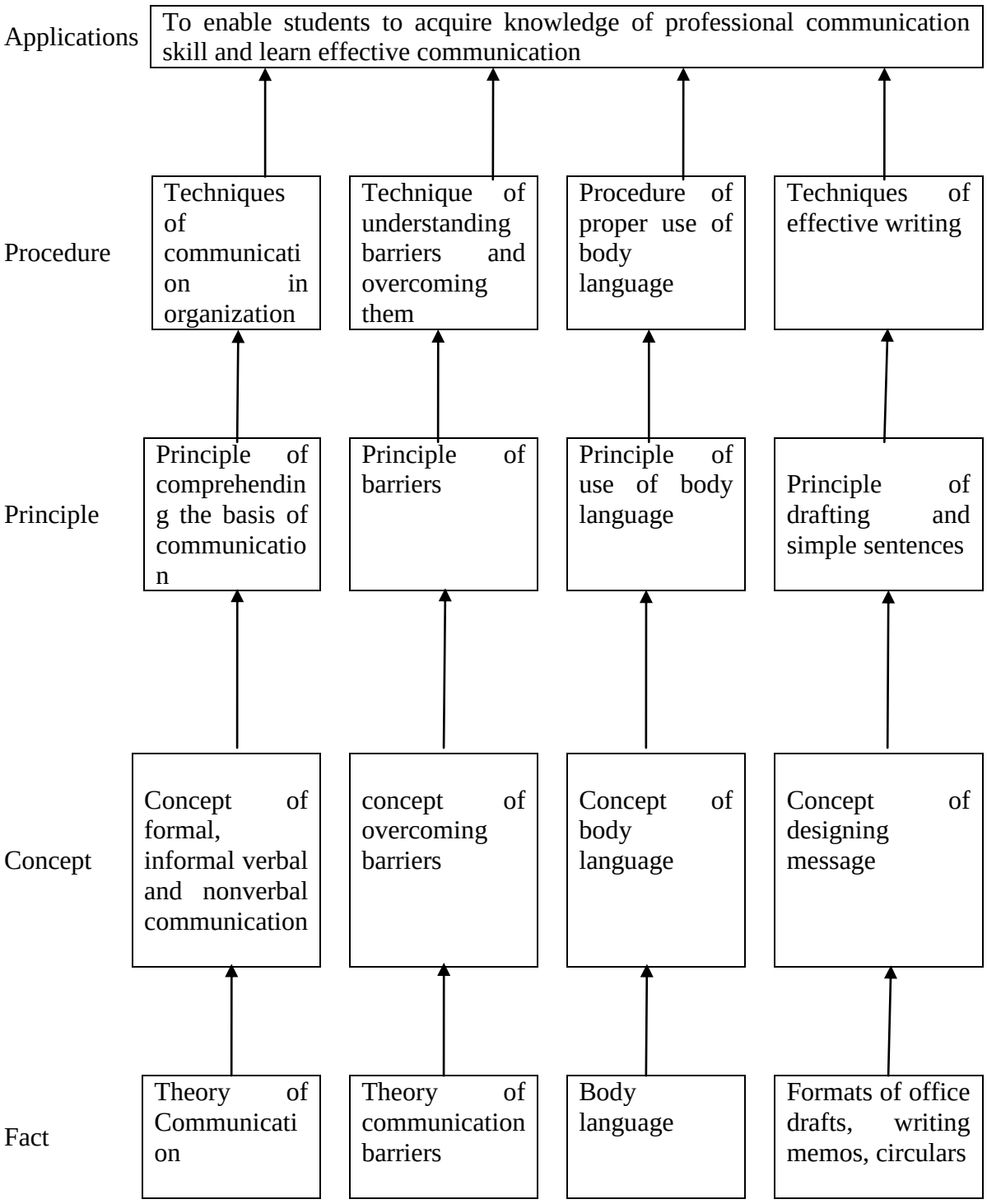
In this age of globalization, competition is tough. Hence effective communication skills are important. Communication skills play a vital and decisive role in career development. The subject of Communication Skills introduces basic concepts of communication. It also describes the verbal, non-verbal modes and techniques of oral and written communication. It will guide and direct to develop a good personality and improve communication skills.

General Objectives:

Students will be able to

1. Utilize the skills necessary to be a competent communicator.
2. Select and apply the appropriate methods of communication in various situations.

Advance English Communication Learning Structure:



Advance English Communication Theory:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Introduction to Communication:** 1.1 Definition of communication. 1.2 Process of communication with flowchart. 1.3 Types of communication with examples.	08	12
2	**Effective Communication:** 2.1 Principles of communication. 2.2 Identification of barriers to communication.	10	20
3	**Components of Communication System:** 3.1 Modes of communication. 3.2 Channels of communication. 3.3 Message of communication.	06	08
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
4	**Non-verbal and Graphical Communication:** 4.1 Effective use of body language and non-verbal codes. 4.2 View and interpret graphical information precisely.	08	18
5	**Listening Skills:** 5.1 Introduction to listening. 5.2 Listening versus hearing. 5.3 Merits of good listening. 5.4 Types of listening. 5.5 Techniques of effective listening.	06	08
6	**Formal Written Communication:** 6.1 Office drafting: Notice and memo. 6.2 Job application with resume. 6.3 Business correspondence: Enquiry letter, order letter and complaint. 6.4 Report writing: Accident report, Production report writing.	10	14
	TOTAL	24	40

Note: For Term Work

1. **Assignments should be solved in separate A-4 size journal.**
2. **Assignments will be assessed progressively and Term Work marks will be allocated based on these assessments.**

Assignments: Term Work consists of the following assignments:

1. Draw a diagram of communication cycle for given situation.
   State the type and elements of communication involved in it.
2. Graphics: Draw suitable bar-graph using the given data.
   Draw suitable pie-chart using the given data.
3. Compare between listening and hearing (minimum five points).
4. State merits of good listening (minimum five points)
5. Notice writing.
6. Memo writing.
7. Enquiry letter, order letter and complaint letter writing.
8. Accident report writing.
9. Production report writing.
10. Resume writing.

Learning Resources:

Sr. No.	Title	Author	Publisher
1	MSBTE Textbook	MSBTE	MSBTE
2	Communication Skills	B. V. Phatak	Nirali Prakashan
3	Communication Skills	Joyeeta Bhattacharya	Reliable Series

Course : DMTT/DMTC/DKT

Semester : SECOND

Subject Title : Applied Physics

Subject Code : SHC141202

Teaching and Examination Scheme:

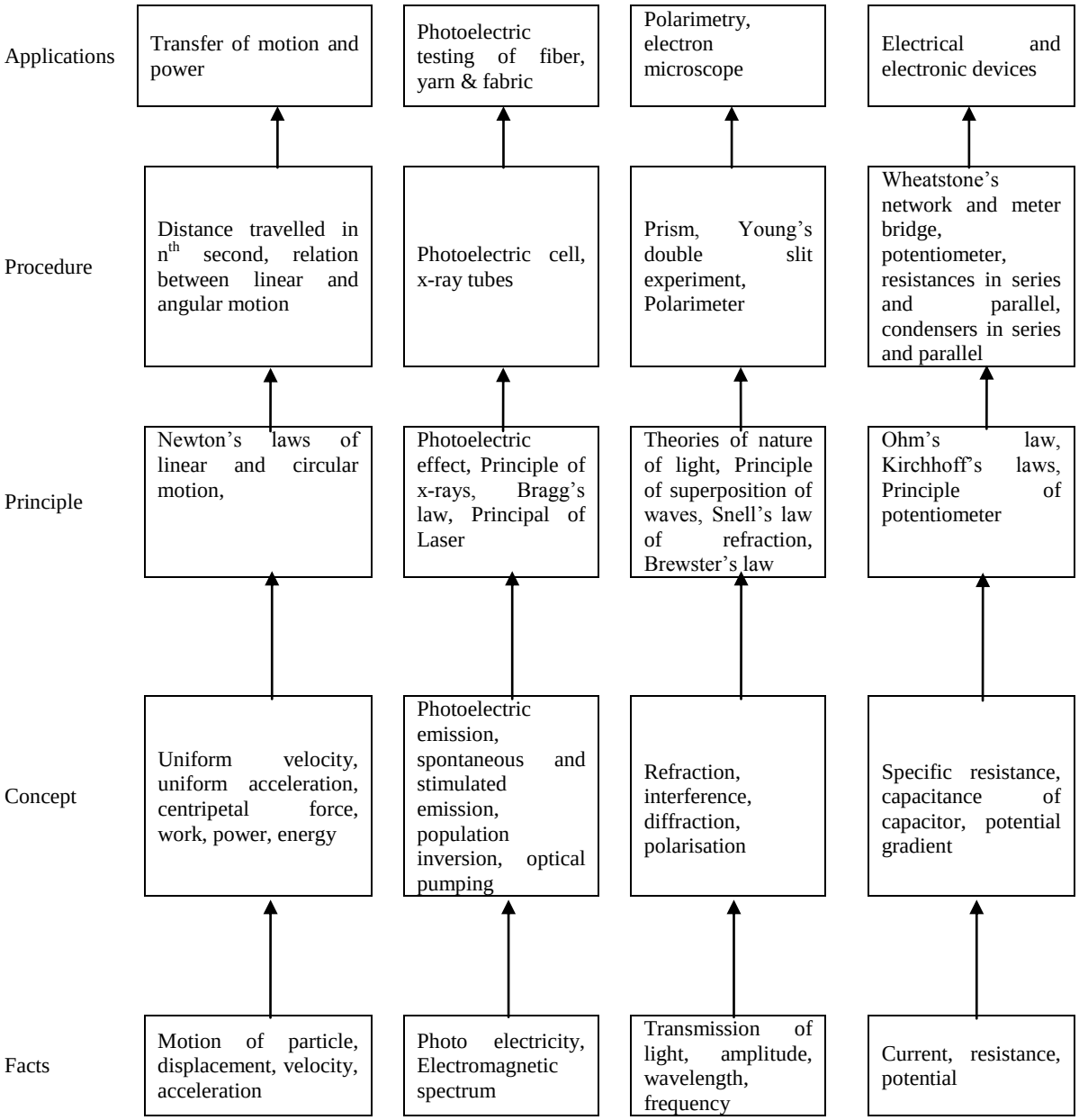
Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	03	06	03	80	20	50	50	200

RATIONALE

Physics is a branch of science characterized by fundamental laws, principles, accurate instrumentation and precision of measurement and expression of its result in mathematical terms to streamline engineering knowledge.

This subject develops the basic concepts in the areas relevant to textiles. Physics plays vital role in helping to measure, analyze, and predict the behaviour of a whole lot of raw material and immediate product during processing under different conditions. The study of this subject imparts necessary knowledge and skill in the area of textiles.

Applied Physics Learning Structure:



Applied Physics Theory:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Motion** 1.1 Rectilinear & Angular Motion: Equations of motion: $v = u + at$, $S = ut + ½ at^2$ & $v^2 = u^2 + 2aS$ (no derivation), distance travelled by particle in n^{th} second (only equation), uniform velocity, uniform acceleration, equations of motion for motion under gravity. (2L, 4M) 1.2 Definition of angular displacement, angular velocity, angular acceleration, relation between linear velocity and angular velocity, relation between linear acceleration and angular acceleration, three equations of angular motion (no derivation), angular distance travelled by particle in n^{th} second (no derivation). (4L, 4M) 1.3 Circular Motion: Definition, centripetal acceleration, centripetal force, definition of centripetal force and its applications. (2L, 4M) 1.4 Numerical examples.	10	16
2	**Modern Physics** 2.1 **Photoelectric Effect:** Photon, Plank's quantum theory, energy of photon, properties of photons, Photoelectric effect, process of photoelectric emission, threshold frequency & threshold wavelength, characteristics of photoelectric effect, work function of a metal, Einstein's photoelectric equation, photoelectric cell, applications of photoelectric cell. Textile applications of photocell. Numerical examples. (4L, 6M) 2.2 **X-rays:** Production of x-rays using Coolidge x-ray tube, properties of x-rays, applications of x-rays, Braggs law of x-ray diffraction. (4L, 6M) 2.3 **Laser:** Laser, laser properties, spontaneous and stimulated emission, population inversion, optical pumping, meta-stable state, textile applications. (02L, 04M).	10	16
3	**Bohr's Postulates of Hydrogen Atom:** 3.1 Planck's quantum theory 3.2 Bohr's postulates of H-atom. 3.3 Expressions for radius of Bohr Orbit and Energy of Bohr orbit (derivation not necessary), Binding energy. Numerical examples.	04	08
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
4	**Optics** 4.1 Refraction of monochromatic light, Snell's law, refractive index, refraction through prism, prism formula (no derivation). 4.2 Interference: Principle of superposition of waves, phenomena of interference, conditions for interference of light. 4.3 Optical Fiber: Introduction to optical fiber, total internal reflection, critical angle, structure of optical fiber, numerical aperture, types of optical fibers and applications. 4.4 Polarization: Polarization by reflection- Brewster's law, applications of polarization in textile.	05	08
5	**Basic Electric Circuits** 5.1 Simple D.C. circuits, Ohm's law, resistances in series, resistances in parallel, Kirchhoff's laws. Specific resistance. Internal resistance of a cell, general equation of Ohm's law. 5.2 Wheatstone's network, meter bridge, balancing condition. 5.3 Potentiometer: Principle of potentiometer, potential gradient. 5.4 Condenser: Capacity of a condenser, Definition of One Farad, condenser in series and in parallel. 5.5 Numerical examples.	10	16
6	**Heating Effect of Electric Current** 6.1 Joule heating and Joule's law of electric heating. 6.2 Electric energy and power, definition of one Watt, definition of kilo-watt hour or board of trade unit or unit. 6.3 Numerical examples on calculation of electricity bill.	03	06
7	**Work, Power & Energy** 7.1 Definition of work, power and energy. 7.2 Equations of potential energy and kinetic energy, law of conservation of energy. Work-energy principle. 7.3 Power: IHP, BHP, % efficiency. Power developed by bodies in circular motion. 7.4 Numerical examples.	06	10
	TOTAL	24	40

Applied Physics Practical:

The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B

Group A: List of Experiments:

1	Refractive index of prism by using spectrometer
2	Specific resistance by V-A method
3	Principle of potentiometer
4	Unknown resistance using Wheatstone's bridge
5	Series law of resistance using Ohm's law
6	Parallel law of resistance using Ohm's law
7	Characteristics of a photocell
8	Comparison of EMFs of two cells-single cell method by using potentiometer
9	Comparison of EMFs of two cells-sum and difference method by using potentiometer
10	Specific resistance by using Wheatstone's bridge

Group B: Solutions to the Assignments given in class.

Assignment Number	Topic
1	Motion
2	Photoelectric Effect
3	X-rays
4	Laser
5	Bohr's postulates of H-atom
6	Optics
7	Basic Electric Circuits
8	Heating effect of electric current
9	Work & Power
10	Energy

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	Applied Physics	B. G. Bhandarkar	Vrinda Publication
2	Engineering Physics	R. K. Gaur & S. L. Gupta	Dhanpat Rai & Sons, Delhi
3	A Textbook of Engineering Physics	B. L. Theraja	S. Chand Publishers, New Delhi
4	Engineering Physics	V. Rajendran	Tata McGraw Hill Publication
5	Conceptual Physics	P. G. Hewitt	Pearson Education (10^{th} Edition)
6	Physics Std – XI & XII	---	HSC Board/CBSE Board
7	Fundamentals of Physics	Resnick, Halliday & Walker	Wisley Toppan Publishers
8	Physics Std –XI	Ashok B. Babar & Yogesh Babar	Reliable Publications
9	Physics Part I & II Std –XII	Ashok B. Babar & Yogesh Babar	Reliable Publications
10	Applied Physics	Prof. Manikpure	S. Chand Publications

Course : DMTT/DMTC/DKT

Semester : SECOND

Subject Title : Applied Chemistry

Subject Code : SHC141203

Teaching and Examination Scheme:

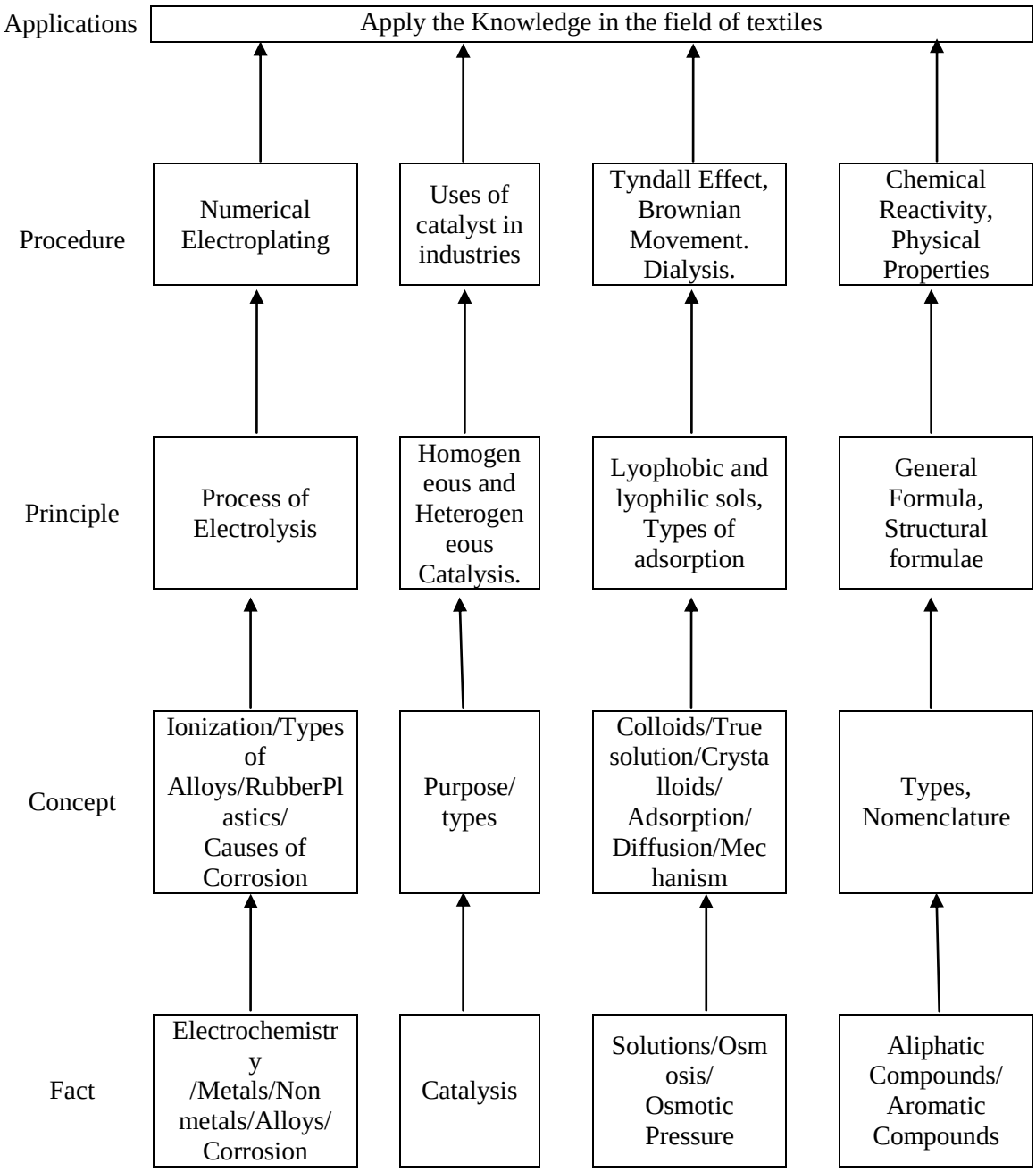
Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	Paper HRS	TH	Test	PR	OR	TW	TOTAL
03/-	03	06	03	80	20	50	---	50	200

RATIONALE :-

The Applied Chemistry section develops reasoning towards certain phenomenon occurring due to the shape, size, form and constitution of chemicals and their textile and non-textile applications. The Organic Chemistry introduces the ability of chemicals to form strong and long macromolecules leading to textile applications.

The practical introduce and utilize analytical tools for quantitative and qualitative estimation of identified and unidentified chemicals.

Applied Chemistry Learning Structure:



Applied Chemistry Theory:-

SECTION I

Topic No.	Contents	Hours	Marks
1	**Electrochemistry:-** 1.1 Definitions of – atom, ion (cation & anion), distinction between atom and ion, Electrolytes, non-electrolytes, cathode, anode, Electrolysis. Faraday's laws of Electrolysis, numericals. 1.2 **Corrosion** – Definition, causes, types, effects, & protective methods – electroplating, sherardising galvanizing and tinning,. 1.3 **Alloys** - Definition, Types-Ferrous and Non-Ferrous alloys, purposes of making alloys, composition, properties and applications of duralumin and wood's metal.	03	06
2	**Catalysis:** 2.1 Definition of catalyst and catalysis. 2.2 Importance of catalyst in textile industry. 2.3 Types of catalysis - Homogenous and Heterogeneous catalysis, definition and examples.	02	05
3	**Colloids and Adsorption:-** 3.1 Definitions of colloid, crystalloid, solution, Disperse phase, dispersion. 3.2 Explanation with example of Tyndall effect, Brownian Movement and Dialysis. 3.3 Definitions – adsorption, adsorbate and adsorbent. Explanation of adsorption as surface phenomena. 3.4 Types -Physical & Chemical adsorption 3.5 Freduilch's & Langmuir's adsorption isotherm – derivation and applications. 3.6 Applications of adsorption.	05	08
4	**Osmosis and Osmotic Pressure:-** 4.1 Definition of colligative property and diffusion. 4.2 Introduction of semi-permeable membrane. 4.3 Definition and applications of osmosis and osmotic pressure with examples.	03	05
5	**Non Metallic Material** 5.1 **Plastics:-**Definition, Types: thermoplastics and thermosetting plastics and their distinctions, properties and applications of plastics. 5.2 **Rubber: -** Introduction, Types – natural and synthetic rubber, vulcanization of rubber. Properties and applications.	04	06
6	**Methods of Purification:-** 6.1 Criteria of Purity. 6.2 Solid – types of solids - crystalline & amorphous. Distinction between them.s 6.3 Crystallization of Copper sulphate 6.4 Liquid - Distillation of Water.	04	05

7	**Water and Surfactants:-** **Water:-** 7.1 **S**ources of water. 7.2 Impurities present in natural water. 7.3 Definition of hard and soft water. Types of hardness. 7.4 Estimation of Hardness of water by EDTA method and numericals. 7.5 Removal of Hardness of water. **Surfactants:-** Introduction, Definition, types of surfactants and applications.	03	05
	Total	24	40

Section II

Topic No.	Contents	Hours	Marks
8	**Introduction to Organic Chemistry**:- 8.1 Introduction. 8.2 Classification of organic compounds. 8.3 Functional group – definition with examples. 8.4 Homologous series – definition with examples. 8.5 IUPAC Nomenclature - rules and examples.	03	05
9	**Aliphatic compounds:-** **A. Alkane** A 9.1 Introduction, structural formulae of methane and ethane. A 9.2 Preparation of methane from methyl iodide, Wurtz Reaction. A 9.3 Chemical Reactions-Chlorination of methane, Combustion reaction. A 9.4 Uses of methane. **B. Alkenes** B 9.1 Introduction, structural formula of ethylene. B 9.2 Preparation of ethene from ethyl alcohol. B 9.3 Chemical Reaction of ethene, ozonolysis of ethylene. B 9.4 Uses of ethylene. **C. Alkynes** C 9.1 Introduction. C 9.2 Preparation of ethylene from calcium carbide (Laboratory preparation). C 9.3 Chemical Reaction of ethylene-Hydrogenation reaction. C 9.3 Uses of acetylene.	04	07
10	**Aromatic compounds:-** 10.1 Introduction. 10.2 Structural formulae of Benzene, Toluene, Naphthalene, Anthracene. 10.3 Reactions for sulphonation, nitration and halogenation of benzene. 10.4 Significance in dyestuff industry.	03	04

11	**Halogenated Hydrocarbons** 11.1 General Formula and Classification. 11.2 Monohalogen derivative-Methyl chloride –Preparation from methane. Chemical reaction-Action of NaOH, KCN. 11.3 Dihalogen derivative-Only examples and structural formulae of Ethylidene dichloride and ethylene dichloride. 11.4 Trihalogen derivative- Chloroform –Reaction with oxygen, Hydrogen /zinc dust and water, alcoholic KOH, uses. 11.4 Tetrahalogen derivative-Carbon tetrachloride Preparation from Methane. Uses.	03	07
12	**Organic Hydroxy Compounds:-** **Aliphatic alcohols and Phenols** **A. Alcohols** A 12.1 Introduction and classification of alcohols. A 12.2 Structural formula of Methanol, Ethanol, Glycol, Glycerol. A 12.3 Structural differences between primary, secondary and tertiary alcohols and mono, di & tri-hydric alcohols. A 12.4 Reactivity of these alcohols. A 12.5 Uses of Alcohols. **B Phenols** B 12.1 Introduction B 12.2 Action of NaOH, Nitric acid on phenol. B 12.3 Distinction between alcohol and phenol. B 12.4 Uses of Phenol.	04	05
13	**Ethers, Aliphatic aldehydes and ketones** **Ethers** 13.1 Introduction. 13.2 Classification with examples. 13.3 Preparation of dimethyl ethyl by Williamson's synthesis and Continuous Etherification. **Aldehydes and ketones-** 13.4 Definition, General formula, of aldehydes and ketones. 13.5 Types of ketones with examples . 13.6 Structural formulae of acetaldehyde, acetone. 13.7 Uses of acetaldehyde and ketones.	03	06
14	**Acids, aliphatic esters and amines** **A. Acids** A14.1 Introduction, general formula of carboxylic acids, A14.2 Preparation of formic acid by oxidation method and acetic acid from methyl cyanide. A14.3 Chemical reactions - action of ammonia on acetic acid. **B. Esters** B14.1 Introduction, General formula. B14.2 Structural formula of Ethyl Acetate. B14.3 Chemical Reactions – hydrolysis of ethyl acetate. **C. Amines** C14.1 Introduction, Classification of Amines. C14.2 Diazotization and coupling reactions of aniline.	04	06
	Total	24	40

The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B

Group A: Applied Chemistry Practical:-
List of Experiments:

1	To determine the strength of sodium carbonate in terms of normality and g/lit using s0.1 N NaOH
2	To determine the strength of sulphuric acid in terms of normality and g/lit using 0.1 N oxalic acid.
3	To determine the strength of Ferrous Ammonium sulphate in terms of normality and g/lit using 0.099 N oxalic acid
4	To determine temporary and permanent hardness of water by EDTA method.
5	Ferrous sulphate v/s Potassium dichromate. Redox reaction with external indicator
6	Ferrous sulphate v/s Potassium dichromate. Redox reaction with internal indicator
7	Preparations of:-Soap and detergents
8	Preparations of:-Urea-Formaldehyde resin. (Demonstrative practical)
9	Inorganic Qualitative Analysis:- Ferrous sulphate, Copper sulphate
10	Inorganic Qualitative Analysis:-: Stannous chloride, Nickel sulphate -
11	Inorganic Qualitative Analysis:- Cobalt chloride, Ferric chloride.

Group B: Solutions to the Assignments given in class.

Assignment Number	Topic
1	Electrochemistry and Catalysis
2	Osmosis and Colloidal State of Matter
3	Non Metallic Material.
4	Purification of substances and water and surfactant.
5	Introduction to organic compounds.
6	Aliphatic compounds.
7	Aromatic compounds.
8	Halogenated Hydrocarbons and Organic hydroxyl Compounds
9	Ethers, Aliphatic aldehydes and ketones
10	Acids, aliphatic esters and amines

REFERENCES:-

Sr. No.	Name of Book	Author	Publisher
1	Fundamental Chemistry, Std XI	M.M Thatte & B.R. Pandit	Nirali Prakashan
2	Chemistry, Std XI	Dr. S. P. Pathak & others.	----
3	Fundamental of Qualitative Analysis	Erwin B. Kelsey, (Sasmira Library 9C/ K	The MacMillan & Co.
4	Analytical Chemistry	Gary D. Christian, Sasmira Library 9C/ Chr.	John Wiley & Sons

Course : DMTT/DMTC/DKT

Semester : SECOND

Subject Title : Applied Mathematics

Subject Code : SHC141204

Teaching and Examination Scheme:

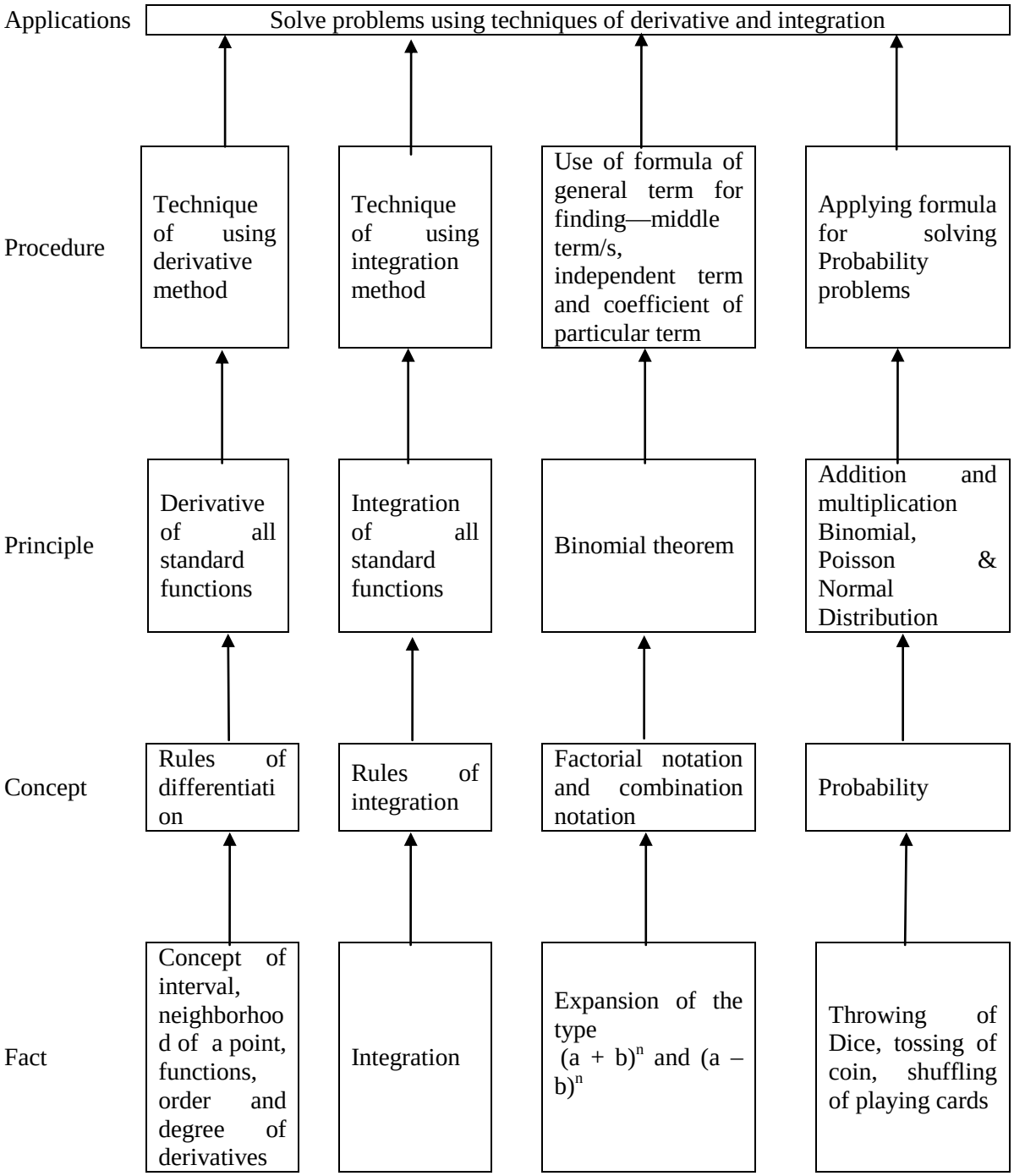
Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	--	03	03	80	20	--	50	150

RATIONALE

Mathematics is the foundation of science and technology. The study of applied mathematics is helpful to understand concepts of engineering. This subject enhances logical thinking capability and also improves the systematic approach in solving engineering problems.

Measures of central tendency, Measures of dispersion, Correlation & Lines of Regression plays an important role in Textile subjects.

Applied Mathematics Learning Structure:



Applied Mathematics Theory:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Function and Limit:** **Function: (02 Hr, 02 M)** 1.1 Definition of variable, constant, intervals such as open, closed, semi-open etc. 1.2 Definition of function, value of a function and types of functions with simple examples. **Limit: (04 H, 06 M)** 1.3 Definition of neighborhood, concept and definition of limit and its standard properties. 1.4 Limits of algebraic, exponential and logarithmic functions with simple examples.	06	08
2	**Derivatives:** 2.1 Definition of derivative and notations. 2.2 Derivatives of all standard functions. 2.3 Rules of differentiation (without proof) such as sum, difference, scalar multiplication, product and quotient. 2.4 Derivatives of composite functions (simple problems). 2.5 Applications of derivative: slope, tangent line, normal line and maxima & minima of a curve.	09	16
3	**Integration:** 3.1 Definition of integration. 3.2 Integration of all standard functions. 3.3 Standard integral problems based on finding integral of algebraic, trigonometric, logarithmic function by use of definition and direct use of standard formula for respective function. (Integration by substitution, by parts and partial fraction method excluded) 3.4 Definition and properties of definite integration. 3.5 Simple problems based on properties of definite integration and its applications (Area, Volume, mean value and Root Mean Square value).	09	16
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
4.	**Binomial Theorem:** 4.1 Introduction to factorial notation and combination notation (no examples will be asked on this topic). 4.2 Statement of Binomial theorem for positive integer index only. 4.3 Expansion of the type $(a + b)^n$ & $(a – b)^n$ for n less than or equal to 5. 4.4 Examples on the calculation of particular term/s of expansion. 4.5 Use of formula of general term for finding—middle term/s, independent term and coefficient of particular term.	08	14
5.	**Probability:** 5.1 Definition of Probability. 5.2 Algebra of mutually exclusive events & exhaustive events. 5.3 Addition and Multiplication theorem of probability & problems based on the same. 5.4 Poisson, Binomial & Normal distribution.	10	16

6.	**Applications of Vectors:** 6.1 Algebra of Vectors- Addition of Vectors, Multiplication of vectors and its properties. 6.2 Vector product of two vectors. 6.3 Simple Applications of vectors such as work done by force and moment of force about a point.	06	10
	TOTAL	24	40

Note: 1) **The Term Work consists of solutions to Assignments given in class on various topics.**
2) Make a group of 20 students and for each group minimum 10 problems are to be given.
3) Assignment problems are to be solved in A-4 size journal and should be continuously assessed.

List of Assignments:

Sr. No.	Topic
1	Function
2	Limit
3	Derivative
4	Applications of derivatives
5	Integration
6	Applications of Integration
7	Binomial Theorem
8	Probability
9	Poisson, Binomial and Normal distribution
10	Applications of vectors

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	Mathematics for Polytechnic	S. P. Deshpande	Pune Vidyarthi Griha
2	Plane Trigonometry – I & II	S. L. Loney	S. Chand Publication
3	Matrices	Ayres	Schaum series McGraw Hill
4	Higher Engineering Mathematics	B. S. Grewal	Khanna Publication
5	Engineering Mathematics	S. S. Sastry	Prentice Hall of India

Course : DMTT/DMTC/DKT

Semester : SECOND

Subject Title : Applied Mechanics

Subject Code : SHC141205

Teaching and Examination Scheme:

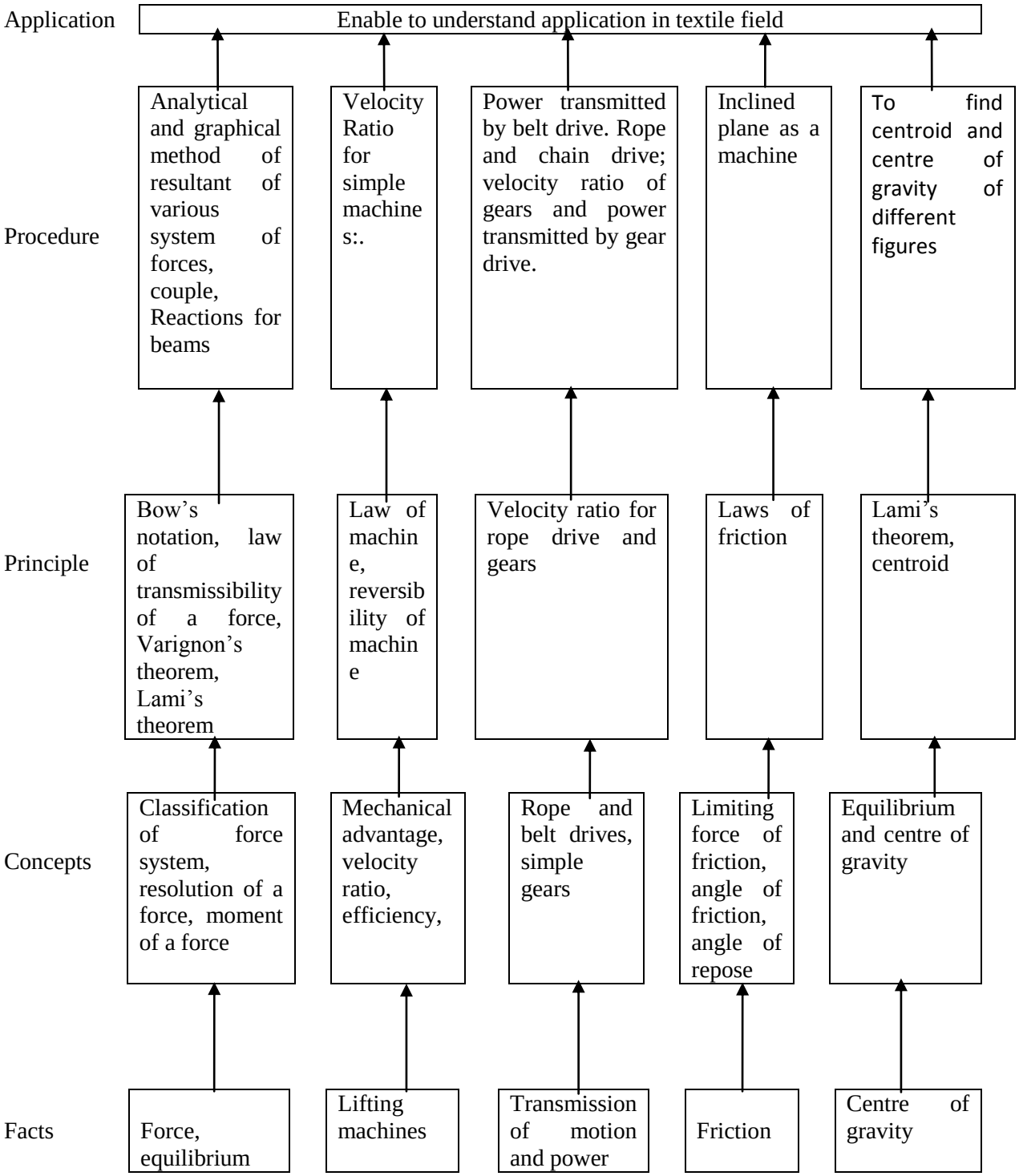
Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	03	06	03	80	20	---	50	150

Rationale:

In designing a structure, analysis of types of forces and their effects plays a vital role. This subject provides knowledge about the different types of forces/loads and their effects while acting in different conditions. The subject also provides the knowledge about basic concepts of laws of engineering and their applications to textile engineering problems.

This subject works as a prerequisite for future subjects such as textile mechanics. Also knowledge of transmission of motion and power is pre-requisite for study of working of power looms.

Applied Mechanics Learning Structure:



Applied Mechanics Theory:

SECTION-I

Topic No.	Contents	Hours	Marks
1	**Force Systems** 1.1 Fundamentals and Force Systems: Definition of mechanics, statics, dynamics, kinematics, rigid body, mass, weight, classification of force system according to plane coplanar, sub classification of coplanar force system—collinear, concurrent, non-concurrent, parallel like parallel, unlike parallel etc. Definition of force, SI unit of force, representation of a force by vector and Bow's notation. Characteristics of a force, scalar, vector, law of transmissibility of force. (04L, 06 Marks) 1.2 Resolution of a Force and Moment of a Force: Definition of resolution of a force, resolution along two mutually perpendicular directions. Definition of moment, SI unit, classification of moments, Varignon's theorem of moment and its use, definition of couple, SI unit, properties of couple with example. (04L, 06M)	08	12
2	**Composition of Forces** 2.1 Analytical Method: Definition of resultant force, methods of composition of forces, triangle law of forces, polygon law of forces, parallelogram law of forces, algebraic method for determination of resultant for concurrent and non concurrent, parallel coplanar force system. (04L, 06M) 2.2 Graphical Method: Space diagram, vector diagram, polar diagram, funicular polygon, resultant of concurrent and parallel force system only. (04L, 06M)	08	12
3	**Simple Machines** 3.1 Definitions: Simple machine, compound machine, load, effort, mechanical advantage, velocity ratio, input of a machine, output of a machine, efficiency of a machine, ideal machine, ideal effort and ideal load, load lost in friction, effort lost in friction. (02L, 04M) 3.2 Analysis: Law of machine, maximum mechanical advantage, maximum efficiency of a machine, reversibility of a machine, condition for reversibility of a machine, self locking machine. (02L, 04M) 3.3 Velocity Ratio for simple machines: Simple axle and wheel, differential axle and wheel, single purchase crab winch, double purchase crab winch, worm and worm wheel, simple screw jack, first-second and third system of pulleys, Weston's differential pulley block, geared pulley block, inclined plane as a machine. Calculations of MA, VR & efficiency of a machine. Identification of machine such as reversible or non reversible machine. (04L, 08M)	08	16
	TOTAL	24	40

SECTION-II

Topic No.	Contents	Hours	Marks
4	**Equilibrium** 4.1 Equilibrant and Lami's Theorem: Definition of equilibrant, relation between resultant and equilibrant, equilibrant of concurrent and non-concurrent force system, analytical and graphical conditions of equilibrium for concurrent, non-concurrent and parallel force system, free body & free body diagram, statement and explanation of Lami's theorem, application of Lami's theorem for solving engineering problems. (04L, 06M). 4.2 Beams: Types of beams (cantilever, simply supported, overhanging, fixed, continuous), types of end supports (simple support, hinged, roller), classification of loads (point load, inclined point load, uniformly distributed load), analytical method to determine reaction of simply supported—cantilever and overhanging beam subjected to point load and UDL. Graphical method to determine reactions for beams subjected to vertical point loads and UDL only. (04L, 06M).	08	12
5	**Transmission of Motion and Power** 5.1 Belt drive, velocity ratio of belt drive with and without slip, power transmitted by belt drive. Rope and chain drive. (02L, 04M). 5.2 Simple gears, types of gears, velocity ratio of gears and power transmitted by gear drive. (02L, 04M).	04	08
6	**Centroid and Centre of Gravity** 6.1 Centroid: Definition of centroid, centroid of basic geometrical figures such as square, rectangle, triangle, circle, semicircle and quarter circle. Centroid of composite figure with not more than two geometrical figures. (03L, 05M). 6.2 Centre of Gravity: Definition, centre of gravity of simple solids such as rectangular block, cylinder, sphere, hemisphere, cone and cube. Centre of gravity of composite solids with not more than two simple solids (hollow solids not expected). (03L, 05M).	06	10
7	**Friction** 7.1 Definition, limiting force of friction, coefficient of friction, angle of friction, relation between coefficient of friction and angle of friction. Inclined plane and angle of repose, types of friction, laws of friction, advantages and disadvantages. (03L, 05M). 7.2 Equilibrium of a body on horizontal plane subjected to horizontal and inclined force. Equilibrium of a body on inclined plane subjected to forces applied parallel to the plane only. Concept of ladder friction. (03L, 05M).	06	10
	TOTAL	24	40

Applied Mechanics Practical:

The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B

Group A: List of Experiments:

1	Simple Screw Jack
2	Differential Axle & Wheel
3	Single Purchase Crab Winch
4	First System of Pulleys
5	Worm & Worm Wheel
6	Double Purchase Crab Winch
7	Coplanar concurrent Forces
8	Lami's Theorem
9	Parallelogram Law of Forces
10	Coefficient of static friction and dynamic friction using horizontal plane

Group B: Solutions to the Assignments given in class.

Assignment Number	Topic
1	Force System
2	Composition of Forces: Analytical method
3	Composition of Forces: Graphical method
4	Simple Machines: Simple Axle & Wheel, Second System of Pulleys, Inclined Plane as a Machine
5	Law of machine, maximum mechanical advantage, maximum efficiency of a machine etc.
6	Equilibrium: Lami's theorem
7	Equilibrium: Beams
8	Transmission of Motion and Power
9	Centroid and Centre of Gravity
10	Friction

REFERENCES:

Sr. No.	Name of Book	Author	Publication
1	Applied Mechanics (Part I & II)	Mr. Sunil Deo	Nirali Prakashan
2	A Textbook of Applied Mechanics	Mr. R. S. Khurmi	S. Chand & Co. Ltd.
3	Engineering Mechanics	Shames & Rao	Pearson Education
4	Engineering Mechanics	R. C. Hibeller	Pearson Education
5	Applied Mechanics	Mr. S. Ramamrutham	Dhanpat Rai & Sons, Delhi

Course : DMTT/DMTC/DKT

Semester : SECOND

Subject Title : Introduction to Textile Fibres

Subject Code : CTC 142206

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
02	--	02	03	80	20	--	--	100

RATIONALE

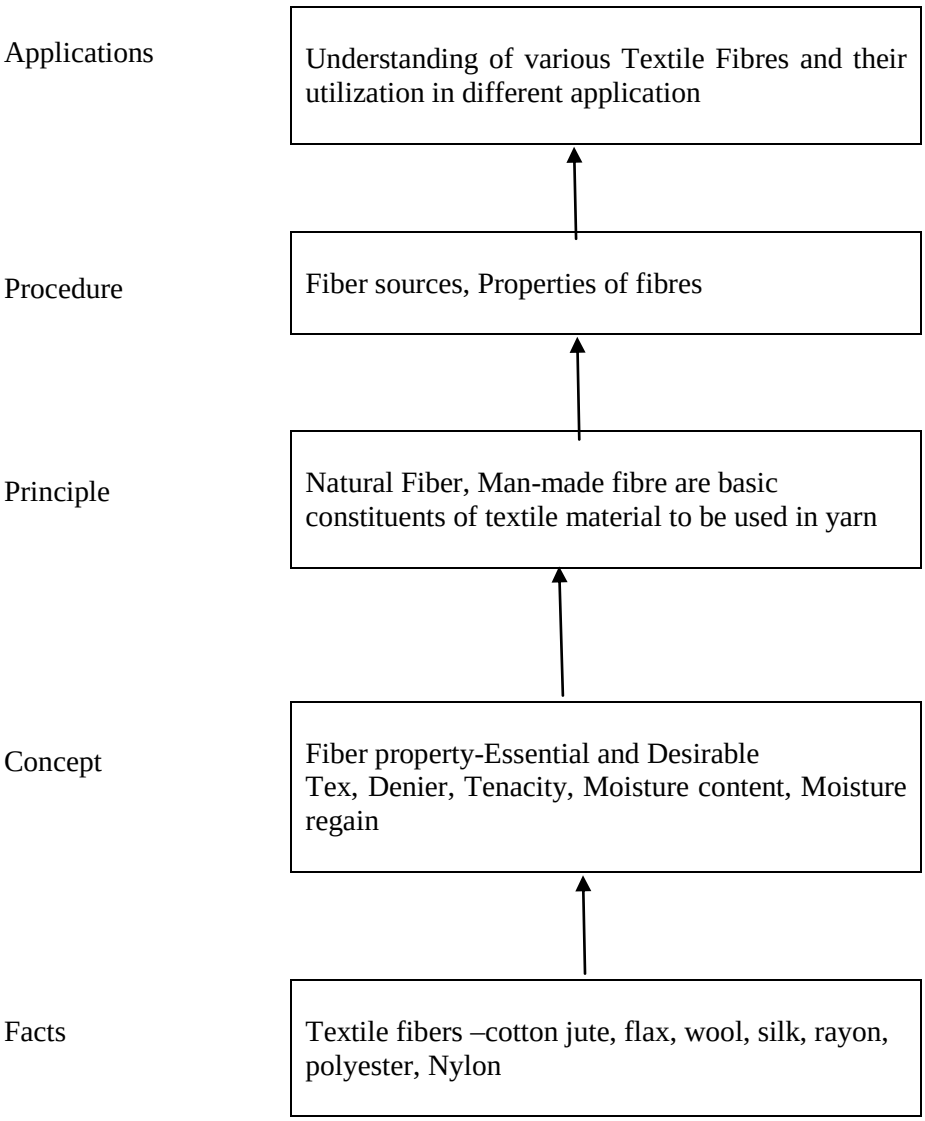
Study of Different class of Textile fibre, Their Chemical composition, Physical and chemical properties; help the students to understand various Natural and Man-made fibres, Also student will know the utility of different Textile fibers.

General Objectives:

Students will be able to

1 Understand the different fibers.
2 classify the textile fiber.
3 Know the properties and utility of fibers.

Introduction to Textile Fibres Learning Structure:



Introduction to Textile Fibres Theory:

SECTION – I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Introduction of Fiber** 1.1 Definition of terms like- Fibre, Textile Fibre, staple and filament fibre & its comparison. 1.2 Detailed classification of textile fibre with example.	3	8
2	**Textile Fibre Properties-** 2.1 Essential and Desirable properties of textile fibres. 2.2 Basic terminology – Linear Density, Tenacity, Tex, Moisture content and Moisture Regain, Hydrophilic and Hydrophobic fibre, Thermo-plastic and Non-thermoplastic fibre.	3	6
3	**Natural Fibres-** 3.1 Definition of cellulose and its structure. 3.2 Introduction to Cotton fibres,. 3.3 Cultivation and harvesting of cotton fibre. 3.4 Physical and Chemical properties and end use of cotton.	3	8
4	**Bast Fibres**: 4.1 Extraction of Jute fibres from plant. 4.2 Physical & Chemical properties and end use of Jute. 4.3 Extraction of Flax fibers from plant. 4.4 Physical & Chemical properties and end use of Flax.	3	8
5	**Animal Fibres**: 5.1 Introduction to animal fibres. 5.2 Wool Fibres: Physical & Chemical properties and end uses of wool. 5.3 Silk: Life cycle of silk worm. 5.4 Method of extraction of silk from Cocoon, 5.5 Physical and Chemical properties & end uses of silk.	4	10

SECTION – II			
Topic No.	**Contents**	**Hours**	**Marks**
6	**Introduction to Man-Made fibre-** 6.1 Classification of man-made fibers. 6.2 Advantages and limitations of Man-made fibres. 6.3 General terminology used in man-made fibres-polymer, addition polymerization, condensation polymerization, degree of polymerization.	03	08
7	**Regenerated Fibre-** 7.1 Introduction to Viscose Rayon. 7.2 Physical and chemical properties and applications of Viscose Rayon. 7.3 Physical and chemical property and applications of HWM Rayon. 7.4 Physical and chemical properties and applications of Polynosic Rayon. 7.5 Introduction to Cuprammonium rayon. 7.6 Physical and chemical properties and applications of Cuprammonium Rayon. 7.7 Introduction to Acetate rayon. 7.8 Physical and chemical properties and applications of Acetate Rayon.	05	12
8	**Polyester** 8.1 Introduction to polyester fibre. 8.2 Physical and chemical Properties and uses of polyester.	02	06
9	**Polyamide fibre** 9.1 Introduction to Polyamide fibres. 9.2 Physical and chemical properties of and applications of Nylon 6, and nylon 6,6. 9.3 Comparison between Nylon 6 and Nylon 6,6	02	06
10	**Acrylic Fibre** 10.1 introduction to acrylic fibre. 10.2 Physical and chemical properties of acrylic fibre.	02	04
11	**New Generation Fibres:** 11.1 Introduction to spandex, aramid and lyocell and their applications.	02	04

Note: For Assignment

1. **Assignments should be solved in separate A-4 size journal.**
2. **Assignments will be assessed progressively.**

Assignments to be given in class.

Assignment Number	Topic
1	Introduction of Fibre
2	Textile fibre properties
3	Natural Fibre
4	Bast Fibre
5	Animal Fibre
6	Man-made fibre
7	Regenerated fibre
8	Polyester
9	Polyamide fibre
10	Acrylic fibre
11	New generation fibres

REFERENCES:-

Sr. No.	Name of Book	Author	Publications
1	Introduction To Textile Fibers	H V Shreenivas murthy	The Textile Association India, Mumbai
2	Textile fibres	V. A. Shenai	Sevak Publications
3	Textile Science	E.P.G Gohl and L. D. Vilanski	CBS Publishers and Distributors,Delhi,India
4	A text book of fibre science and Technology	S. P. Mishra	New age International (p) Ltd Daryaganj, New Delhi-110002.
5	Manmade Fibres	P.W.Moncrieff	Newnes, Butterworths, London.

BOARD OF STUDIES

MEETING

DMTT DEPARTMENT

SIMMT, SASMIRA

12.00 NOON, 09TH SEPTEMBER, 2015

VENUE: SASMIRA

TEACHING SCHEME

AND

EXAMINATION SCHEME

III & IV SEMESTER

SYLLABUS

DMTT DEPARTMENT

SASMIRA'S INSTITUTE OF MAN-MADE TEXTILES
Sasmira, Sasmira Marg, Worli, Mumbai-400 030

COURSE STRUCTURE, TEACHING & EXAMINATION SCHEME & SYLLABUS (SCHEME – 2)

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT) /

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT) AND

DIPLOMA IN KNITTING TECHNOLOGY (DKT)

Implemented from Academic Year 2014-15

Guidelines for Subject Code

7. The Program DMTT/DMTC/DKT each is divided into five levels.

Level	Category	Code
1	Science and Humanities	SH
2	Core Technology	CT
3	Applied Technology	AT
4	Diversified Technology	DT
5	Management	MT

8. The code for common subject, DMTT, DMTC, DKT and Non credit subject are

Common subject	C
Textile Technology	T
Textile Chemistry	X
Knitting Technology	K
Non Credit Subject	N

9. The subject code presently used for the subject English is SHC1101.
   (f) Here "SH" represents the category Science & Humanities.
   (g) "C" represents that the subject is common for DMTT/DMTC/DKT.
   (h) The next digit "1" represents Level 1.
   (i) The next digit "1" represents Semester 1.
   (j) The last two digits "01" represent serial number of the subject.

10. We continue this coding system with simple addition of "14" signifying year of revision of curriculum. Accordingly, subject code for English is now SHC141101.

11. Another example: Existing subject code for Engineering Graphics is ATC3206. This subject belongs to Applied Technology (Level 3) and is common for DMTT/DMTC/DKT-II. The new subject code would be ATC143207.

12. Non credit subject will carry grade as A = Excellent, B = Very good, C = Good and D = Poor

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)

SUMMARY SHEET OF LEVELWISE COURSE STRUCTURE

AND

TEACHING & EXAMINATION SCHEME (SCHEME – 2)

SEMESTER III AND SEMESTER IV

Level	Title	C	O	Teaching Scheme			Examination Scheme					Total
							Progressive		Final exam			
				L/TU	P	Total	Test	TW	TH	PR	OR	
1	Science & Humanities	--	--	--	--	--	--	--	--	--	--	--
2	Core Technology	05	--	16	12	28	100	200	400	200	-	900
3	Applied Technology	09	--	14	12	26	100	200	400	200	-	900
4	Diversified Technology	01	--	3	3	6	20	50	80	50	-	200
5	Management Courses	--	--	--	--	--	--	--	--	--	--	--
	TOTAL			**33**	**27**	**60**	**220**	**450**	**880**	**450**	**--**	**2000**

Notation:

1. L = Lecture
2. TU = Tutorial
3. P = Practical
4. Test = Sessional Test
5. TW = Term Work
6. TH = Theory paper
7. PR = Practical Exam
8. OR = Oral Exam
9. C = Compulsory subject
10. O = Optional subject
11. * = Non credit subject

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)

LEVELWISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME (SCHEME – 2)

SEMESTER III AND SEMESTER IV -

Level - 1 SCIENCE & HUMANITIES

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
				L/ TU	P	CR	Progressive		Final exam			
							Test	TW	TH	PR	OR	
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
	TOTAL			--	--	--	--	--	--	--	--	--

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)

LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER III AND SEMESTER IV

Level - 2 CORE TECHNOLOGY

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
							Progressive		Final exam			
				L/ TU	P	CR	Test	TW	TH	PR	OR	
CTT 142302	Yarn Manufacturing Technology- I	C	CTC14 2206	3	3	6	20	50	80	50	-	**200**
CTT 142303	Fabric Manufacturing Technology-I	C	Nil	3	3	6	20	50	80	50	-	**200**
CTT 142304	Elementary woven Structures	C	Nil	3	3	6	20	50	80	50	-	**200**
CTT 142403	Yarn Manufacturing Technology-II	C	CTT 142302	3	3	6	20	50	80	50	-	**200**
CTT 142404	Fabric Manufacturing Technology-II	C	CTT 142303	3	3	6	20	50	80	50	-	**200**
CTT 142405	Compound Woven Structures-I	C	CTT 142304	3	3	6	20	50	80	50	-	**200**
	TOTAL			**18**	**18**	**36**	**120**	**300**	**480**	**300**	**-**	**1200**

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)

LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER III AND SEMESTER IV

Level - 3 APPLIED TECHNOLOGY

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
							Progressive		Final exam			
				L/ TU	P	CR	Test	TW	TH	PR	OR	
ATC 143301	Physical Testing of Textiles-I	C	Nil	3	3	6	20	50	80	50	-	**200**
ATN 143306	Industrial Visit	C	Nil	-	2*	-	-	-	-	-	-	-
ATN 144307	Computer Applications	C	Nil	-	2*	-	-	-	-	-	-	-
ATC 143401	Physical Testing of Textiles-II	C	ATC 143301	3	3	6	20	50	80	50	-	**200**
ATC 143402	General Engineering	C	Nil	2	-	2	20	-	80	-	-	**100**
ATN 141407	Social & Environmental Awareness	C	Nil	-	2*	-	-	-	-	-	-	-
ATN 143408	Industrial Visit	C	Nil	-	2*	-	-	-	-	-	-	-
	TOTAL			**08**	**06**	**14**	**60**	**100**	**240**	**100**	**-**	**500**

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)

LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER III AND SEMESTER IV

Level - 4 DIVERSIFIED TECHNOLOGY

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
				L/ TU	P	CR	Progressive		Final exam			
							Test	TW	TH	PR	OR	
DTT 144305	Fundamentals of Chemical Processing	C	Nil	3	3	6	20	50	80	50	-	**200**
	TOTAL			**3**	**3**	**6**	**20**	**50**	**80**	**50**	**-**	**200**

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)

LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER III AND SEMESTER IV

Level - 5 MANAGEMENT COURSES

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
				L/ TU	P	CR	Progressive		Final exam			
							Test	TW	TH	PR	OR	
--	--	--	--	--	--	--	--	--	--	--	--	--
	TOTAL			--	--	--	--	--	--	--	--	--

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)

SEMESTERWISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER III AND SEMESTER – IV

Semester	No. of Theory Papers	C	O	Teaching Scheme			Examination Scheme					
				L / TU	P	CR	Progressive		Final exam			Total
							Test	TW	TH	PR	OR	
Semester-3	05	07	--	15	15	30	100	250	400	250	-	**1000**
Semester-4	06	08	--	18	12	30	120	200	480	200	-	**1000**
TOTAL	**11**	**15**	**--**	**33**	**27**	**60**	**220**	**450**	**880**	**450**	**---**	**2000**

SASMIRA'S INSTITUTE OF MAN-MADE TEXTIES

TEACHING AND EXAMINATION SCHEME

DIPLOMA PROGRAMME MAN-MADE TEXTILE TECHNOLOGY (DMTT)

Implemented from 2014-2015

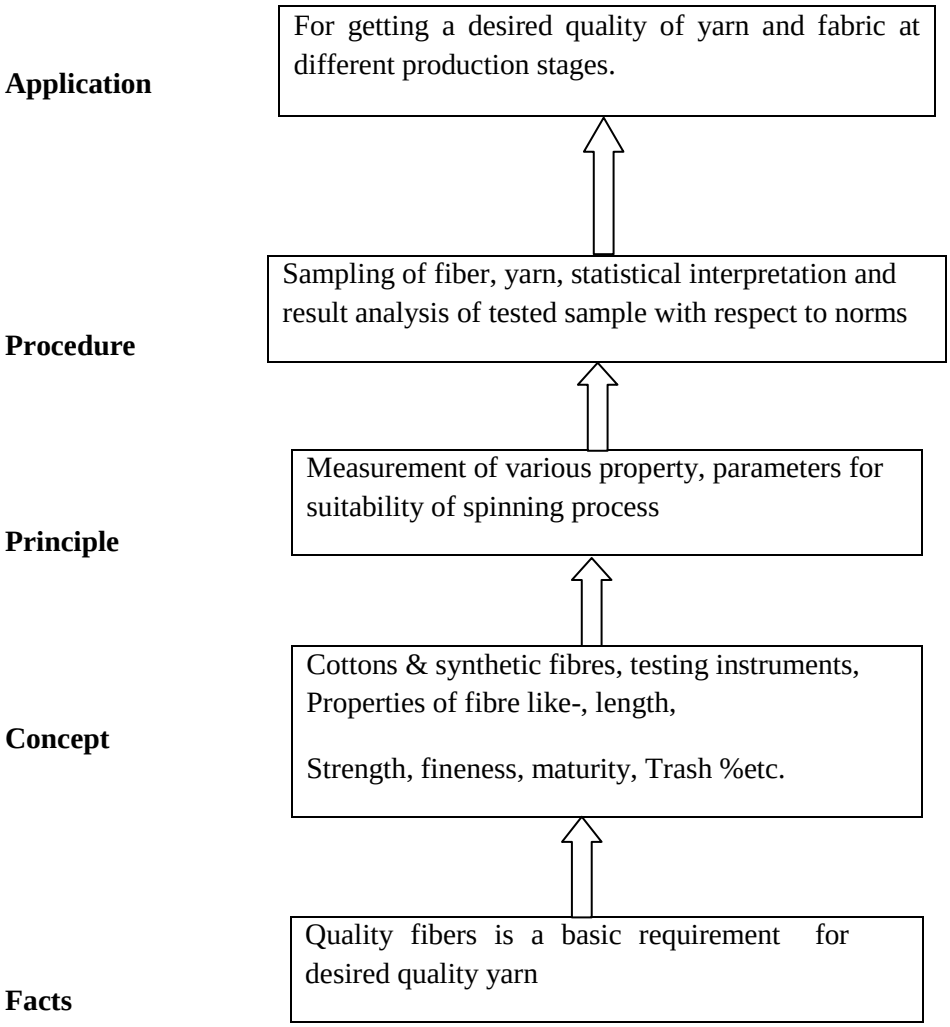
SEMESTER - III

CODE	COURSE & TITLE	C/O	PRE-REQUISITE	TEACHING SCHEME			EXAM SCHEME (Marks)					TOTAL
				L/T	PR	CR	Progressive		Final Exam.			
							TEST	TW	TH	PR	OR	
ATC 143301	Physical Testing of Textiles-I	C	Nil	3	3	6	20	50	80	50	-	**200**
CTT 142302	Yarn Manufacturing Technology- I	C	CTC142206	3	3	6	20	50	80	50	-	**200**
CTT 142303	Fabric Manufacturing Technology-I	C	Nil	3	3	6	20	50	80	50	-	**200**
CTT 142304	Elementary woven Structures	C	Nil	3	3	6	20	50	80	50	-	**200**
DTT 144305	Fundamentals of Chemical Processing	C	Nil	3	3	6	20	50	80	50	-	**200**
ATN 143306	Industrial Visit	C	Nil	-	2*	-	-	-	-	-	-	**-**
ATN 144307	Computer Applications	C	Nil	-	2*	-	-	-	-	-	-	**-**
TOTAL				**15**	**15**	**30**	**100**	**250**	**400**	**250**	**-**	**1000**

*Non Credit Subject

Course Details

Physical Testing of Textiles-I Learning Structure:



COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOG /DIPLOMA IN MAN-MADE TEXTILE CHEMISTRY/DIPLOMA KNITTING TECHNOLOGY
COURSE CODE : DMTT/DMTC/DKT
SEMESTER : THIRD
SUBJECT TITLE : PHYSICAL TESTING OF TEXTILES-I
SUBJECT CODE :ATC 143301

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	03	06	03	80	20	50	50	200

RATIONALE

Physical Testing of Textiles course aims at providing understanding of physical properties of textile materials. Physical properties, their basic mechanism, methods of determination, units and applications in textile processes are outlined.

The current Physical Testing of Textiles – I deals with fundamentals of Quality standards, different testing principle and Testing of fiber and Yarn properties and yarn numbering system. The thorough understanding of above concepts can make students testing textiles for above properties.

General Objectives:

Students will be able to

1 Understand the correct sampling technique for testing.
2 Know the different fiber and yarn properties and their testing methods.
3 Interpret and Compare the test result with testing standards.

Physical Testing of Textiles-I Theory:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Sampling and Introduction of Textile Testing:** 1.1 Objectives of Textile Testing 1.2 Definition of sample, Population 1.3 Sampling and its Necessity 1.4 Selection of sample-Random sampling, biased sampling, 1.5 Sampling technique of fibre, yarn and fabric. 1.6 Errors in Testing - Types of errors, its causes and Remedies. 1.7 Introduction testing standards– ASTM,BS,IS,ISO,SDC etc.	05	10
2	**Identification of common textile fibers**: 2.1 Importance of fiber identification 2.2. Fibre identification Methods - a) Microscopic test , b) Burning test, c) Solubility (Chemical) test, d) Staining test, e) feel test	04	06
3	**Fibre fineness:** 3.1 Fiber fineness and its significance. 3.2 Definitions-Micronair, Tex, Denier 3.3 Measurement of fibre fineness by- a) gravimetric Method, b) Optical Method- by Projection microscope , c)Electrical Method -by using Vibroscope, d) Air flow principle and measurement by tester based on air flow principle	04	06
4	**Fibre Maturity and Trash %** 4.1 Fibre maturity and its significance 4.2 Methods of determination of fiber maturity – a) Caustic soda method b) Polarized light Method c) Differential Dyeing Method 4.3 Cotton grading: American, Egyptian & Indian cotton grading 4.4 Invisible loss, %Trash, %Lint and its measurement by Shirley trash analyzer. 4.5 Fibre Quality Index (FQI)	04	06
5	**Fibre length :** 5.1 Significance of Fiber length 5.2 Determination of fibre length by - a) Hand stapling method, b) Comb sorter-principle and analysis of comb sorter diagram, c) Fibrograph-principle and analysis of fibrogram 5.3 Span length ,Uniformity Ratio and its importance	04	08
6	**Newer fiber testing equipments**. 6.1 Basics principle and applications of - a) HVI b) AFIS 6.2 Principle of electron microscopy and its advantages and various application in textiles 6.3 Application of advance testing instrument like -SEM,AFM in textile.	03	04
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
7	**Yarn numbering system** 7.1 Definition-linear density, 7.2 Different Systems of yarn numbering –its merit and demerits 7.3 Cotton count, French count, Metric count, Denier &Tex and their calculations 7.4 Conversion of yarn number from one system to another 7.5 Resultant count and its calculation. 7.6 Measurement of yarn number by – a) Analytical Method, b) Quadrant balance, c) Beesley yarn count balance	06	10
8	**Textiles and Moisture**: 8.1 Definition s-Moisture content and moisture regain, standard regain, regain of blend, Standard testing atmosphere, Relative Humidity 8.2 Effect of moisture on physical properties of textile and processing. 8.3 Regain –humidity relations-Hysteresis, absorption and desorption curve 8.4 Factors affecting on Regain of Textile material 8.5 Measurement of regain by a) oven –dry method b) electrical method.	05	08
9	**Strength and elongation testing of Textiles.** 9.1 Definition & Units of terms like stress, strain ,specific stress, tenacity, breaking length, elongation, %extension , 9.2 Force-elongation curve and Stress-strain curve, 9.3 Yield Point-methods of yield point construction,, 9.4 Definition -Young's Modulus, Work of Rupture, Elastic Recovery 9.5 Time dependent and instantaneous effect, 9.6 Factors affecting Tensile properties of textiles	05	08
10	**Fiber Strength Testing** 10.1 Fibre strength Testing by: a) Pressley tester b) Stelometer, 10.2 Correlation between both the strengths	03	04
11	**Yarn Strength Testing:** 11.1 CRL & CRE principles, pendulum lever principle 11.2 Single yarn strength tester – construction and working 11.3 Principle and working of Instron tester. 11.4 Lea Strength testing - a) Lea preparation by wrap reel b) Construction and working of lea tester c) count strength product. (CSP) and its significance. 11.5 Ballistic strength of the yarn: Principle and working the ballistic tester.	06	10
	TOTAL	24	40

Physical Testing of Textiles-I Practical:

The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B

Group A: List of Experiments: Physical Testing of Textiles -I

1	Identification of fibres by microscopy.
2	Identification of fibers by Burning test
3	Fibre fineness by cut & weigh method
4	Measurement of Fibre length by comb sorter.
5	Fibre strength measurement by stelometer
6	Moisture regains measurement by oven-dry method
7	Measurement of yarn count by Beesley yarn count balance.
8	Determination of single yarn strength and elongation.
9	Determination of Lea strength and yarn CSP.
10	Measurement of Yarn Impact strength.

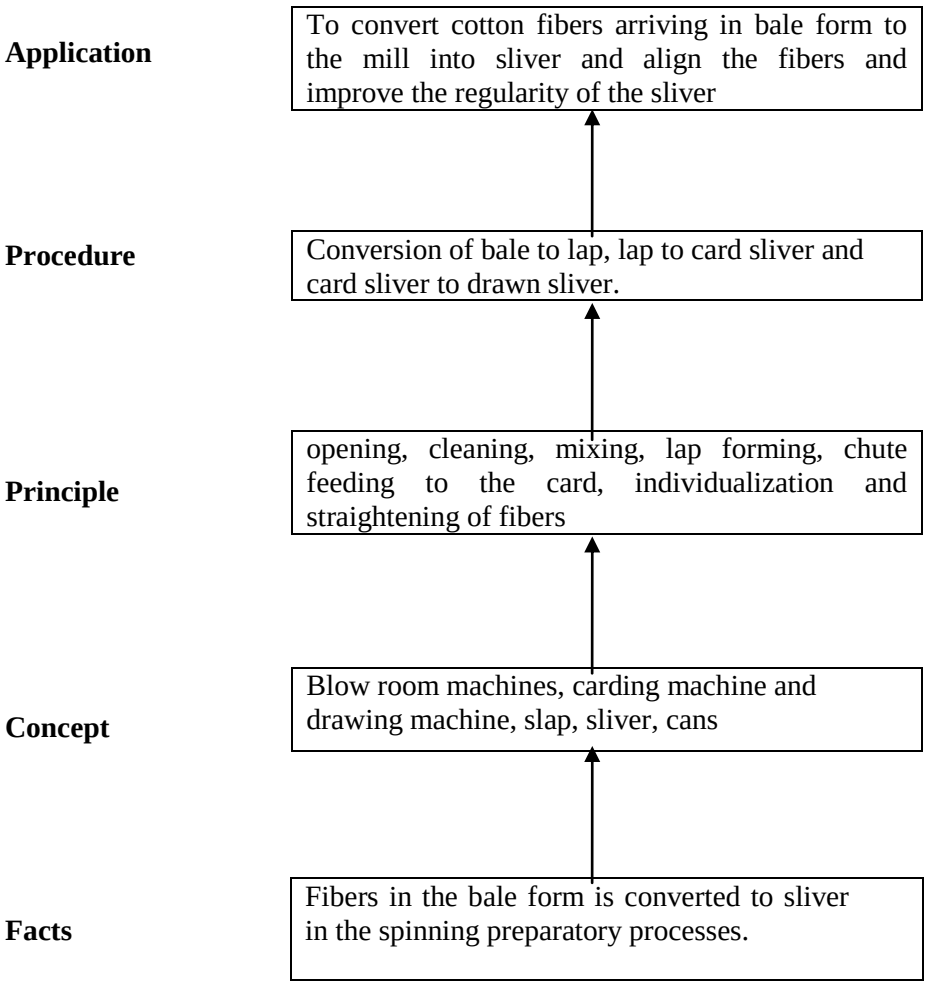
Group B: Solutions to the Assignments given in class.

Assignment Number	Topic
1	Sampling and Introduction of Textile Testing
2	Identification of common textile fibers
3	Fibre fineness
4	Fibre Maturity and Trash %
5	Fibre Length
6	Newer fiber testing equipments.
7	Yarn numbering system
8	Textiles and Moisture
9	Strength and elongation testing of Textiles
10	Fiber & Yarn strength testing

Note: For Assignment
1. Assignments should be solved in separate A-4 size journal.
2. Assignments will be assessed progressively.
References:

Sr No.	Name of Book	Author	Publication
1	Principles of Textile Testing	J. E. Booth	Chemical Publishing Co. INC,New York
2	Physical Properties of Textile Fibers	W.E. Morton & J.W. Hearle	
3	Physical Testing of Textiles	B. P. Saville	Woohead Publishing Limited in association with The Textile Institute Abington Hall, Abington, Cambridge England
4	Textile Testing, Physical, Chemical & Microscopic	John Skinkle	
5	Textile Testing	P.Angappan & R.Gopalakrishnan	SS Textile Inst, Coimbatore

Yarn Manufacturing Technology –I **-- Learning Structure:**



COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : THIRD
SUBJECT TITLE : YARN MANUFACTURING TECHNOLOGY --I
SUBJECT CODE : CTT 142302

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	03	05	03	80	20	50	50	200

RATIONALE

Introduction to textile fibers is covered in the first year. This semester includes the study of the characteristics of cotton fiber required for spinning and processing of this material through the three processes in spinning i.e. Blow room, Carding and Drawing. It covers the principles and description of these processes and their machines with related information and skill
The practicals conducted in this subject are related to the same theory topics for better understanding of the subject matter to the students.

General Objectives:

Students will be able to
1. Draw the flow chart of the spinning processes
2. Understand the opening, cleaning, blending and lap formation processes.
3. Describe the various machines in the Blow room—construction, working, settings and other parameters.
4. Understand the carding and drawing processes and the Carding and Draw frame machine.
5. Draw sketch of Carding and Draw frame machine and their gearing diagrams.
6. Calculate the speeds , drafts, cleaning efficiency, hanks and production of the different machines.

Yarn Manufacturing Technology --I:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Introduction to spinning** 1.1 Characteristics of spun and filament yarns 1.2 Properties of textile fibers that influence the process and product of the spinning process 1.3 A flow chart showing the various processes for manufacturing carded and combed yarns 1.4 Characteristics of some important cotton varieties produced in India and other countries suitable for coarse, medium and fine yarns.	03	06
2	**Study of the Conventional Blow room process** 2.1 Basic operations in Blow room-opening, cleaning, mixing, lap forming 2.2 Conditioning and mixing of cotton-importance and methods 2.3 Sequence of machines in a conventional Blow room –major and minor cleaning points 2.4 Study of the construction, working, settings and other parameters of the following machines—Hopper bale breaker, Hopper feeder, Step cleaner, Porcupine opener, Crighton Opener, 2/3 Bladed beater 2.5 Study of Scutcher-Kirschner beater, lap forming and lap regulating	07	12
3	**Study of the Modern Blow room process and Machines** 3.1 Study of the modern mixing methods- 3.2 Study of the construction, working, settings and other parameters of the following modern machines in the Blow room—Axi-flo opener, ERM opener, SRRL opener, Air stream cleaner 3.3 Features of a single process Blow room line. Examples of a Blow room line and how it can be used to process coarse, medium and fine cottons 3.4 Dust removal-Rieter dust extractor, dustex Dx of trutzshler 3.5 Transport of material- mechanical and pneumatic	08	14
4	Evaluation of Blow room Process 4.1 Evaluation of Blow room performance-cleaning efficiency. Waste %, CV % of lap weight, CV% of 5m wrappings of lap 4.2 Defects in Blow room –causes and remedies 4.3 Calculations of Blows/inch, production, cleaning efficiency, waste%	06	08
	TOTAL	24	40

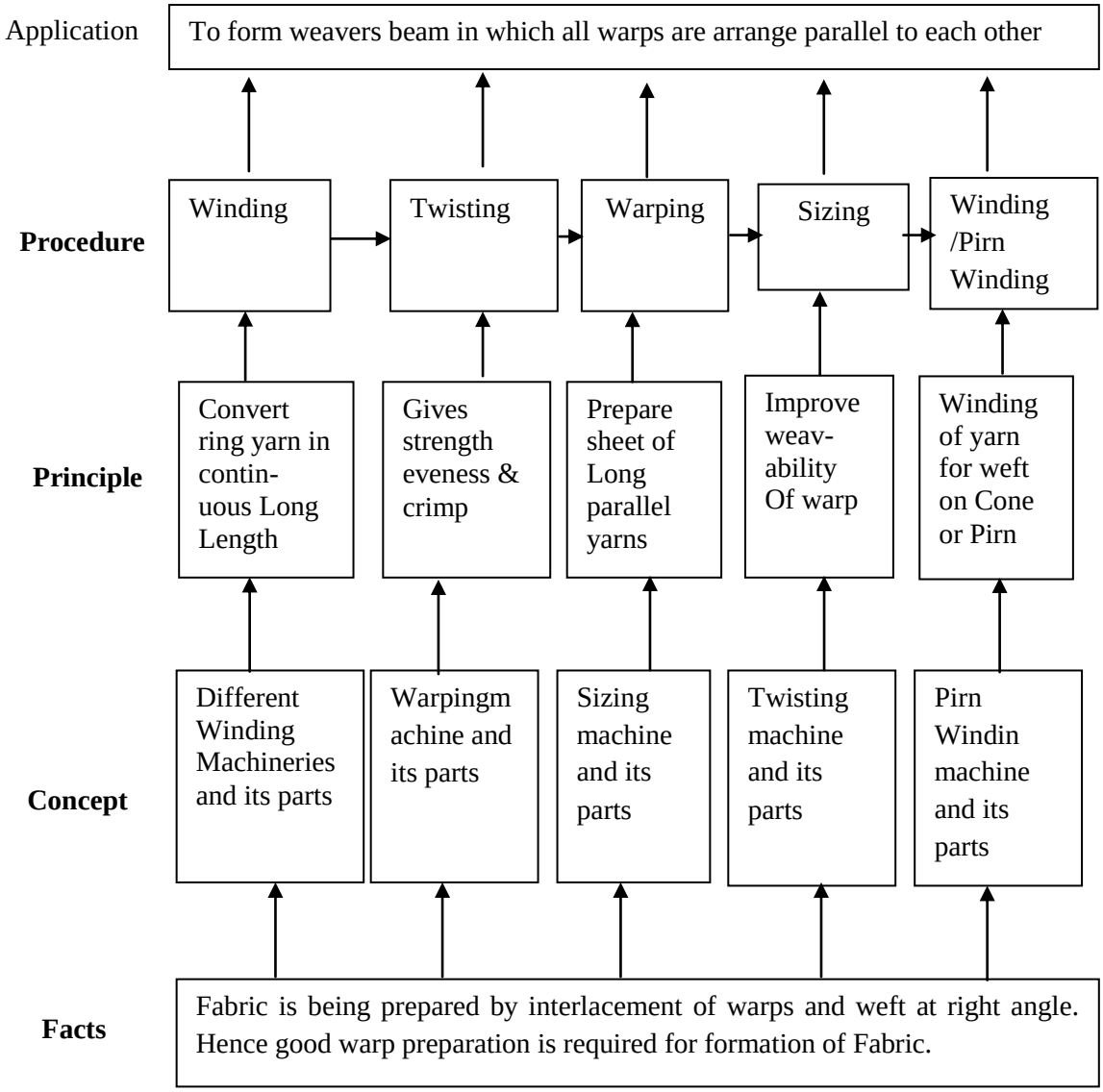
SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
3	**Study of carding process** 3.1 Objectives of the carding process. Passage of material on the carding machine 3.2 Feed section of the carding machine---construction and functions of feed roller, feed plate, Licker-in, mote knives, licker-in undercasing and back plate. 3.3 Carding section of the carding machine—construction and functions of cylinder, flats , cylinder under casing, flat stripping comb, front plate. Mounting and clothing of cylinder. 3.4 Doffing section of the carding machine—construction and functions of doffer, doffer comb, calendar rollers. Coiling of sliver into the can. 3.5 Settings on the carding machine—importance of the different settings and their values 3.6 Maintenance of the carding machine—stripping, burnishing, grinding. 3.7 Quality control in the carding machine-waste generated at the different sections, neps and hooks. Defects in carding- their causes and remedies. 3.8 Developments in the carding machine—chute feed systems, web doffing devices. Features of the modern cards. 3.9 Calculations regarding speeds, drafts and production of the carding machine	15	24
4	**Study of Draw frame process** 4.1 Objectives of the drawing process. Principles of drawing – drafting and doubling. 4.2 study of construction and working of comber—including passage of material. 4.3 Drafting systems on the draw frame—conventional and modern. 4.4 Elements of the drafting system—bottom rollers, top rollers, top roller loading—different Systems, top roller clearers. 4.5 Sliver delivery—trumpet, coiler calendar roller, tube wheel and can. 4.6 Autolevellers-- importance, types—open loop, close loop 4.7 Modern developments in Draw frame 4.8 Defects in the drawing process—causes and remedies 4.9 Calculations regarding hank, draft and production	09	16
	TOTAL	24	40

Practicals	
1	Study of construction and working of Hopper Bale Breaker including passage of material, settings and speeds.
2	Study of construction and working of Hopper Feeder including passage of material, settings and speeds.
3	Study of construction and working of Step Cleaner including passage of material, settings and speeds
4	Study of construction and working of Porcupine Opener and Crighton Opener including passage of material, settings and speeds.
5	Study of construction and working of two and three Bladed Beater including passage of material, settings and speeds.
6	Study of construction and working of Scutcher including passage of material Kirschner Beater, Feed regulating mechanism and lap forming mechanism, settings and speed.
7	Study of construction and working of Carding machine including passage of material, settings and speed.
8	Study of construction and working of Draw Frame machine including passage of material, settings and speed.
9	Study of the gearing diagram of the Carding machine-calculation of speeds, drafts, hank and production.
10	Study of the gearing diagram of the Draw Frame machine-calculation of speeds, drafts, hank and production.
11	Study of Modern Blow room machines

Assignments	
1	Draw aneat labelled diagram of the hopper bale breaker
2	Draw a neat labelled diagram of the step cleaner and porcupine opener
3	Draw a neat labelled diagram of the crighton opener and 2/3 bladed beater
4	Draw a neat labelled diagram of the scutcher
5	Draw a neat labelled diagram of the carding machine
6	Draw a neat labelled diagram of the draw frame machine
7	Numerical problems relating to the production calculations of the blow room
8	Numerical problems relating to the production calculations of the carding machine
9	Numerical problems relating to the waste percent in blow room and carding
10	Numerical problems relating to the production calculations of the draw frame

References	
1	Cotton spinning : Ganesh and Garde
2	Essential elements of Blow room: Khare
3	Technology of short staple spinning vol. I : W. Klein
4	Carding and Drawing : W.Klein
5	Essential elements of Practical cotton spinning : T.K.Pattabhiram
6	Manual of Cotton Spinning : Textile Institute

Fabric Manufacturing Technology –I Learning Structure:



COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : THIRD
SUBJECT TITLE : FABRIC MANUFACTURING TECHNOLOGY-I
SUBJECT CODE : CTT 142303

Teaching and Examination scheme

TEACHNING SCHEME			EXAMINATION SCHEME						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	TW	TOTAL
03	-	03	03	80	20	50	-	50	200

RATIONALE

The Fabric Manufacture is done in various stages after the yarn has been manufactured either on Ring Frame (Spun Yarn) or Filament Yarn. This subject intends to impart knowledge and skills in the area of weaving preparatory processes i.e. Winding, Beam Warping, Sectional Warping and Sizing. These are the essential processes before actual weaving of fabric is done on the loom.

General Objectives:

Students will be able to

1 Understand formation of Different winding packages on winding Machines.
2 Understand formation of warper or weavers beam on Warping Machines.
3 Understand formation of weavers beam on Sizing Machines.

SECTION – I

CHAPTER	TOPIC	HOURS	Marks
1	**Winding**: 1.1Objectives of winding. Classification of winding machine and 1.2.Study of upright & double deck winding machine, drum-winding machine. & precision winding Machine 1.3 Introduction to different winding packages, structure of supply Packages. Different types of traverse motion. Types of yarn guide. 1.4 Different tensioning devices and their working & other tension control technique. 1.5 Types of yarn clearer (slub catcher) and their working . 1.6 Introduction to knotter and Air splicer. 1.7 Calculation of speed & efficiency of drum winding & spindle winding. Traverse ratio. Traverse length. Winding angle 1.8 Different package faults and their remedies, hard waste control 1.9 Introduction to automatic and modern winding machines. Features of Beninnger, Autoconer 138, 238, 338, Muratek etc.,	12	20
2	**Warping** 2.1 Objectives of warping, Classification of warping machine and their study, Different types of creel, 2.2 Study of beam warping machine. Study of sectional warping machine, Section preparation, 2.3 Calculation related to number of section,section leasing, section winding, beaming. Difference between Beam Warping and Sectional Warping Machine, 2.4 Features of modern beam warping & sectional warping machine, 2.5 Calculations required for warping, speed calculation .measuring and stop motion calculation. Hard waste control, beam defects and its remedies, Tension control.	12	20
	TOTAL	24	40

SECTION – II

CHAPTER	TOPIC	HOURS	Marks
1	**Twisting** 1.1Objectives of twisting –different principle of twisting 1.2 study of up twisting machine and two for one twister. 1.3 Calculation pertaining to twisting – faults control.	07	10
2	**Sizing** 2.1 Objectives of sizing with reference to filament and spun yarn, 2.1Sizing ingredients and their properties, recipe to size filament and spun yarn. 2.3 Classification of sizing machine and study of various zones of sizing machines hank sizing, slasher sizing, multi-cylinder & hot air sizing. 2.4 Different types of creels, different types of size boxes& their construction, drying Zone. splitting zone, wet splitting. Hot air & Infra red Drying, Single end sizing machine, 2.5 Features of modern Sizing machine, Various control in modern sizing machine,	10	15
3	3.1 Size pick up & its importance 3.2 Factor governing the pick up of size 3.3 Methods for measurement of size pick up 3.4 Stretch% and its importance. Hard waste control, 3.5 Calculation related to sizing warp i.e. % of size, pick up, production & efficiency. Tape length 3.6 Defects in weavers beam	07	15
	TOTAL	24	40

Fabric Manufacturing-I Practical:

The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B

Group A: List of Experiments:

1	Study of different types of fibers.
2	Study of different types of Yarns.
3	Study of different types of supply packages
4	Study of weaving preparatory& weaving accessories
5	Study of cone winding machine also study of speed, & power transmission of belt
6	Study of double deck winding machine. Speed calculation considering 4% of slippage.
7	Study of up twisting &
8	Study of sectional warping machine.speed and measuring motion calculation.
9	Study of multi cylinder sizing machine.
10	Study of two for one twister

Group B: Solutions to the Assignments given in class.

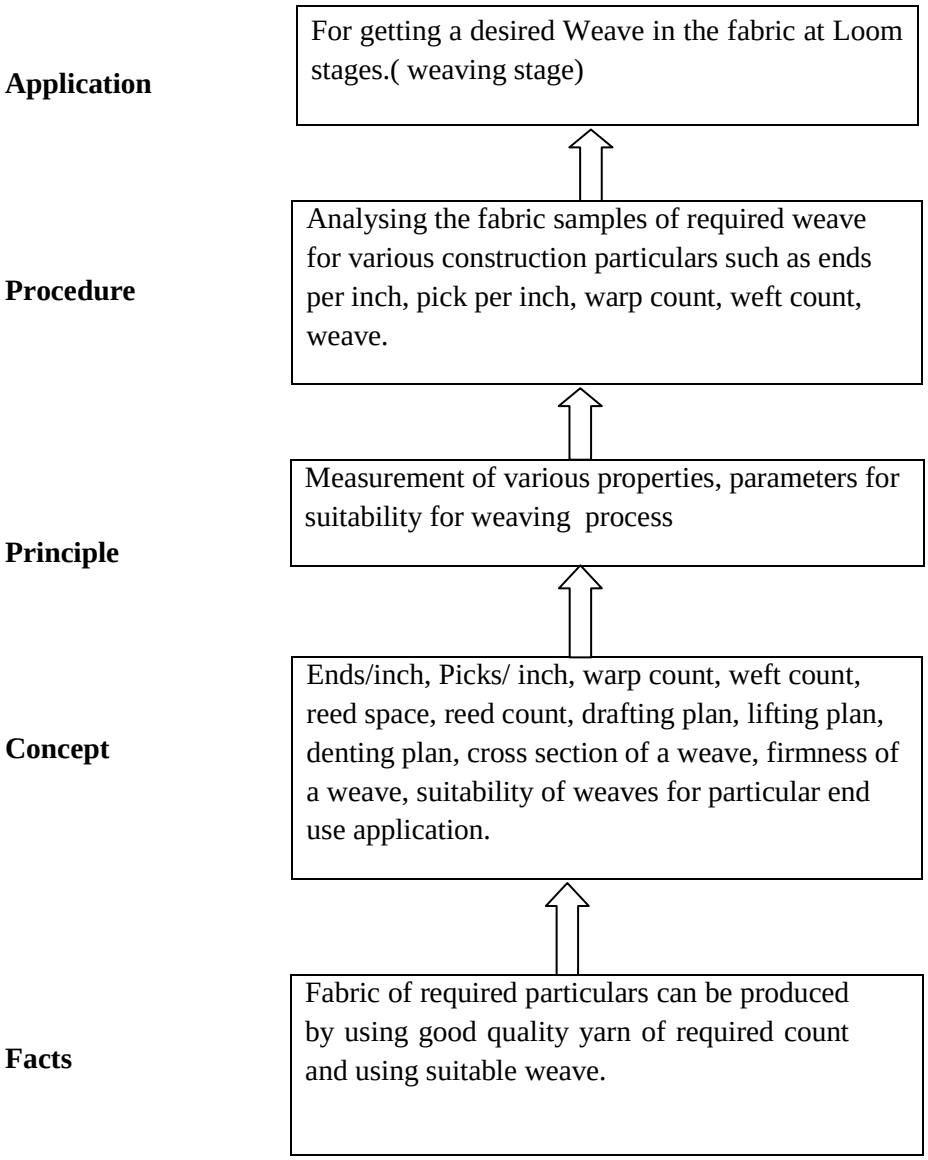
Assignment Number	Topic
1	Yarn Count calculation
2	Speed & efficiency calculation for winding Machine
3	Speed & efficiency calculation for winding Machine
4	Speed & efficiency calculation for warping Machine
5	Speed & efficiency calculation for warping Machine
6	Speed & efficiency calculation for Sizing Machine
7	Speed & efficiency calculation for Twisting Machine
8	Speed & efficiency calculation for Sizing Machine
9	Size pick –up % calculation
10	Size pick –up % calculation

Note: For Assignment
1. Assignments should be solved in separate A-4 size journal.
2. Assignments will be assessed progressively.

REFERENCE BOOKS

- Yarn Preparation Volume I & II - Mr. R. Sengupta
- Cotton yarn Weaving – R.N. Kanoongo and P.R.Roy
- Sizing – Prof. .D.B. Ajgaonkar, Mr. V.R. Wadekar, Dr. .M.K.Talukdar
- Yarn & fabric conversion - Prof. P. R.Lord & Prof. M.H. Mohamed
- BTRA monograph on winding, warping & sizing.
- Technology of warp sizing – Mr. J.B. Smith
- Weaving calculation – Mr. R. Sengupta

Elementary Woven Structures - Learning Structure:



COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : THIRD
SUBJECT TITLE : ELEMENTARY WOVEN STRUCTURES
SUBJECT CODE : CTT142304
Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	03	06	03	80	20	50	50	200

RATIONALE

Elementary Woven Structures course aims at providing basic understanding of woven fabric structures, the concept of warp and weft, the interlacement of these threads in various ways, creating different weaves. This course also aims at the understanding of the concept of drafting plan, lifting plan & denting plan. The course deals with fundamental mechanisms of loom & aims at establishing relationship of weaving and woven fabric designing. The purpose of this course is to develop skills in the students of designing different elementary weaves.

The Elementary Woven Structures deals with fundamentals of interlacement of warp and weft, their graphical representation on graph paper, concept of drafting plan, lifting plan, denting plan, their significance, different elementary weaves, their derivatives, characteristics and properties of them, their usage for manufacturing different types of fabrics for apparels as well as furnishing end use application The thorough understanding of above concepts will lead to better understanding of core technologies of Textile Manufacturing process.

General Objectives:

Students will be able to

1 Understand the concept of interlacement of warp and weft.
2 Represent this woven interlacement on graph paper.
3 Construct drafting plan, lifting plan and denting of any woven interlacement.
4 Draw various elementary woven structures on graph paper.
5 Draw various derivatives of these elementary structures.
6 Analyze the fabric samples of these structures during the practical.
7 Make necessary changes on the loom to produce a fabric of required weave particulars on the loom.

Elementary Woven Structures:

SECTION-I			
Topic No.	**Topic**	**Hours**	**Marks**
1	**Elements of Woven Designs** Basic operations in woven cloth production. Method of fabric representation. Weave repeat unit, Use of point-paper. Concept of Design, Draft and Peg plan, Denting plan. Construction of Draft and Peg plan from the design. Significance of Draft and Peg-plan. Different drafts used – straight draft, Skip draft, sateen draft, Point draft & Herringbone draft. Heald calculations, denting.	04	06
2	**Plain Weave**: **Design, Draft & Peg plan** 2.1 Ornamentation of Plain Weave. 2.11 Use of Colour, balancing of pattern, 2.12 Variation in Twist, shadow stripes 2.13 Count, Sett & Twist variation 2.14 Cockled, Blistered and Seersucker Effect 2.141 Tension Difference 2.142 Differential Shrinkage 2.15 Special Finishing Techniques 2.2. Derivatives of Plian Weave - a) Warp Rib – Regular, Irregular b) Weft Rib - Regular, Irregular c) Mat/Hopsack/Basket – Regular, Irregular & Stitched	06	10
3	**Twill Weave:** 3.1 Systematic construction of twill on 3, 4 5 & 6 heald shafts. 3.2 Construction of Large twill 3.3 Relative firmness of twill 3.4 Effect of twill on properties of yarn 3.5 Derivatives of twill – Horizontal zig-zag twill, Vertical zig-zag twill, Curved twill, Herringbone twill, broken Twill, Transposed twill, Rearranged twill, Elongated twill, Angle made by twill to horizontal, Combination of twills.	08	12
4	**Satin & Sateen Weaves** 4.1 Construction of regular satin and sateen weave on 5 heald shafts 4.2 Difference between Satin & Sateen weave. 4.3 Concept of step number or move number for marking sateen weave on point paper 4.4 Constructing Satin & Sateen weaves on various number of ends 4.5 Rules for deciding the step number or move number while constructing Sateen weave. 4.5 Properties, characteristics of Satin & Sateen weaves. 4.6 Construction of Sateen checks, Weaves constructed on Satin base	03	06
5	**Calculation :** 5.1 Crimp Calculations 5.2 Weight of Warp, Weight of Weft.	03	06
	TOTAL	24	40

SECTION-II			
Topic No.	**Topic**	**Hours**	**Marks**
6	**Design, Draft, Peg plan , Cross section & Constructional Details of Furnishing and Toweling weaves** 6.1 Honey comb – Regular Honey comb on 4,5,6 shafts, Honey comb with equal warp and weft floats, Honey comb with double row of base marks, Honey comb with equal warp and weft floats and double row of base marks, Brighton Honey comb, Characteristics of Brighton Honey comb, Comparison of ordinary & Brighton Honey comb. 6.2 Huck a back - 6.3 Mock Leno – a) Perforated fabrics b) Distorted thread effect 6.4 Crepe – Characteristics of the weave – methods of producing Crepe weave- a) Method of reversing b) On sateen base c) Combination of floating weave with plain threads d) By inserting one weave over another. 6.5 Bedford cord- a) Plain faced Bedford cord, wadded plain faced Bedford cord b) Twill faced Bedford cord, Wadded twill faced Bedford cord. Their comparison. 6.6 Welt – Ordinary Welt & Wadded Welt, Comparison between Welt and Bedford cord. 6.7 Pique – Comparison between Welt & Pique	10	16
7	**Simple Colour and Weave Effect-** 7.1 General considerations arising from combination of weave with colour. 7.2 Representation of colour and weave effect upon design paper. 7.3 Classification of colour and weave effect. 7.4 Method of producing variety of effect in the same weave and colour pattern. 7.5 Different types of colour and weave effects- a) Horizontal continuous line effect. b) Vertical continuous line effect c) Hounds tooth d) Birds-eye and spot effect. e) Hairlines – Horizontal Hairlines & vertical Hairlines f) Step pattern.	04	08
8	**Compound Colour & Weave Effect** Stripe colour and weave effect, Check colour and weave effect, Special colour and weave effect, Figured colour and weave effect. **8.1 Stripe Colour & Weave Effect** 8.11 Simple weave, compound warping, simple wefting . 8.12 Stripe weave, simple warping, simple wefting. 8.13 Stripe weave, compound warping, simple wefting **8.2 Check Colour & Weave Effect** 8.21 Simple weave, compound warping, compound wefting. 8.22 Stripe weave, simple warping, compound wefting. 8.23. Stripe weave, compound warping, compound wefting. 8.24 Cross-over weave, compound warping, simple wefting. 8.25 Cross-over weave, compound warping, compound wefting 8.26. Check weave, simple warping, simple wefting. 8.27 Check weave, compound warping, simple wefting. 8.28 Check weave, simple warping, compound wefting. 8.29 Check weave, compound warping, compound wefting	08	12
9	Construction particulars of Cambric, Chiffon, Georgette, Crepe, Denim, Damask, Drills, Madras shirting, Poplin Quilts, Taffeta, Dhooties	02	04
	TOTAL	24	40

Elementary Woven Designs Practical:

The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B
Group A: List of Experiments: Elementary Woven Structures

1	Introduction to Primary Mechanisms on Loom
2	Analysis of Plain weave sample – Industrial fabric
3	Analysis of Plain weave sample – Stripe design, Checks design, Warp Rib, Mat.
4	Analysis of Twill weave sample – 2/1, 3/1 & 2/2 Twill
5	Analysis of Pointed Twill sample.
6	Analysis of Herringbone Twill sample.
7	Analysis of Sateen sample.
8	Analysis of Sateen Stripes sample.
9	Analysis of Sateen Checks sample.
10	Analysis of Honey comb sample.
11	Analysis of Huck a Back sample.
12	Analysis of Mock leno sample.
13	Analysis of Bedford cord sample.
14	Analysis of Simple Colour & Weave Effect sample- Hound's tooth
15	Analysis of Simple Colour & Weave Effect sample- Step Pattern
16	Analysis of Check Colour & Weave Effect sample

Group B: Solutions to the Assignments given in class.

Assignment Number	**Topic**
1	Draw draft & peg plan of following designs (weaves).
2	Draw designs from the given draft & peg plan.
3	Describe in details various methods used for ornamentation of plain weave.
4	Draw design, draft, peg plan & cross section of various derivatives of plain weave.
5	Draw all possible twill weaves on 3, 4, 5 & 6 heald shafts
6	Draw design draft & peg plan of Pointed twill (Vertical, Horizontal), Curved twill, Herringbone twill, broken twill, elongated twill.
7	Draw all possible sateen weaves on 11 ends
8	Draw ordinary honey comb weave on 6 shafts. Draw ordinary honey comb with a) Equal warp and weft floats b) double row of base marks. Draw Brighton Honey comb on 20 ends & 20 picks. Compare Brighton Honey comb with Ordinary Honey comb.
9	Draw design, draft & peg-plan of Huck a Back and Mock leno weave and elaborate their characteristics.
10	Draw design, draft, peg-plan & cross section of a) Plain faced Bedford cord & b) Twill faced Bedford cord.
11	Construct a Wadded Welt and wadded Pique Design. Draw draft, peg-plan & cross section of the same. Compare them
12	Construct following Simple Colour & Weave Effects- a) Horizontal continuous line effect. b) Vertical continuous line effect c) Hounds tooth d) Birds-eye and spot effect. e) Hairlines – Horizontal Hairlines & vertical Hairlines f) Step pattern.

Assignment Number	Topic
13	Construct Stripe Colour & Weave Effect using a) Simple weave b) Stripe weave
14	Construct Check Colour & Weave Effect using a) Simple weave b) Stripe weave c) Cross over weave d) Check weave
15	Solve the following Numerical based on Crimp Calculations. Numerical based on Weight of Warp & Weight of Weft

Note: For Assignment
1. Assignments should be solved in separate A-4 size journal.
2. Assignments will be assessed progressively.

References:

Sr No.	Name of Book	Author	Publication
1	Watson's Textile Design & Colour (Elementary Weaves and Figured Fabrics)	Z. Grosicki	Butterworth & Co (Publisher) Ltd., London : 88, Kingsway, WC2B6AB
2	Woven Cloth Construction	A.T.C.Robinson	The Textile Institute, 10 Blackfriars street, Manchester : M35DR
3	Textile Designs	Nisbet	West Duxbury Manchester

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : THIRD
SUBJECT TITLE : FUNDAMENTALS OF CHEMICAL PROCESSING
SUBJECT CODE : DTC 144306

Teaching Scheme			**Examination Scheme**					
TH	**PR**	**CR**	**PAPER HRS**	**THEORY**	**SESSIONAL**	**PR**	**TW**	**TOTAL**
02	**03**	**06**	**03**	**80**	**20**	**50**	**50**	**200**

RATIONALE:

This subject gives the knowledge of the processes like shearing, cropping, singeing, designing, scouring, bleaching, whitening and dyeing of different fibers fabrics which are carried out in the process house. It also give knowledge about different methods and styles of printing using different dyes/pigments on different fabrics. It also covers the different techniques of finishing textile. The aim of textile finishing is to render textile goods fit for their purpose or end use.

SECTION – I

CHAPTER	TOPIC	HOURS	Marks
1	**Pretreatment processes** **Specific Objectives:** 1.1 Objectives of Grey inspection, shearing, cropping. 1.2 Object of Singeing and methods of singeing, i.e plate singeing, roller singeing and gas singeing operations in brief. Their merits and demerits. 1.3 Classification & Study of desizing processes in brief such as Rot Steeping, acid, enzymatic and oxidative desizing. Their merits and demerits. 1.4 Fundamentals of Scouring of natural fibres like cotton, wool and silk. 1.5 Brief study of bleaching processes of cotton, silk & wool with bleaching agent like Hydrogen peroxide(H_2O_2). Blueing and optical whitening of textile material 1.6 Brief study of Mercerisation of Cotton.	12	20
2	**Dyeing** **Specific Objectives:** 2.1 Classification of colouring matter based on application. 2.2 Understandings of basic terms in dyeing as % shade, MLR, Exhaustion, even dyeing, dye fastness etc. 2.3 Brief processes for dyeing of cellulosics fibres with direct, reactive and vat dyes. 2.3 Brief processes for dyeing wool & silk with Acid Dyes, Metal complex dyes. 2.4 Brief processes for dyeing of Synthetic fibreswith Disperse Dyes . 2.5 Brief introduction to fabric dyeing m/cs.Principles and working of machines such as Jigger, winch, mangles, beam dyeing and Jet dyeing.	12	20

SECTION – II

CHAPTER	TOPIC	HOURS	Marks
1	**Printing** **Specific Objectives:** 1.1 Introduction to printing. Sequence of operations in printing. 1.2 Understanding methods of printing as Roller, Screen and transfer printing. Styles of printing - direct, discharge and resist. Fixation of prints by steaming, baking, curing etc. 1.3 List and understand the functions of Ingredients of a printing paste. 1.4 Printing recipes and methods for printing cotton with direct, reactive & vat dyes, PET with disperse colors and Pigment printing.	10	16
2	**Finishing** **Specific Objectives:** 2.1 Object & Classification of finishing operations. 2.2 Introduction to chemical finishes as crease – resistant, water repellent/proof, softening, stiffening, fire Proofing/retardant etc. 2.3 Introduction to some mechanical finishing operations as heat setting, calendering, decatising and sanforising.	10	16
3	**Assessment of Fastness & Fibre Analysis** **Specific Objectives:** Fastness of dyes and their assessment - Grey Scales, Principles and standard methods in brief for assessment of fastness to washing, rubbing, Perspiration and light. Qualitative chemical analysis of various fibres. Quantitative analysis of blends as PET/Cotton, PET/Viscose, PET/Wool etc.	04	08

PRACTICALS

1. Acid & Enzyme desizing of cotton.
2. Scouring of cotton.
3. Bleaching of cotton with hydrogen peroxide.
4. Dyeing of cellulosics with direct dye.
5. Dyeing of cellulosic with Reactive dye.
6. Dyeing of cellulosic with Vat dye.
7. Dyeing of Wool & Silk with acid dye.
8. Dyeing of polyester with Disperse Dyes.
9. Printing of cellulosics with Direct dyes
10. Printing of cellulosics with Reactive dyes
11. Finishing with softeners
12. Finishing with stiffening agents
13. Finishing with Water repellant & Fire Retardant.
14. Analysis of PET/Cotton blend

REFERENCES BOOKS

1. Technology of Bleaching and Mercerizing V.A. Shenai, Sevak Publication, Mumbai.
2. Chemical Processing of Synthetic Fibres and blends Datye and Vaidya, Wiley - Interscience Publication.
3. Technology of Dyeing V.A. Shenai, Sevak Publication, Mumbai.
4. Dyeing and Chemical Technology of Textile Fibres, E.R. Trotman, B.I. Publication, New Delhi.
5. Technology of printing, V.A.Shenai, Sevak Pub.
6. Textile Printing, L.W.C. Miles, Bradford Dyes Co. Pub.
7. Introduction to Text. Finishing, J.T. Marsh
8. Tech. of Finishing, V. A. Shenai, Sevak Pub.
9. Colour fastness of Textiles & leather, The society of Dyers & Colourist, England
10. Textile Laboratory manual, W.Garner, Vol.4, Dyestuffus, American Elsevier Pub., NY.

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : THIRD
SUBJECT TITLE : INDUSTRIAL VISIT
SUBJECT CODE : ATN 143306

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
--	02*	--	--	--	--	--	--	--

Note:

During the semester from time to time, all the students will be taken for industrial / educational visits to relevant industries so as to understand the implication of theory and the practical in bulk production. The visits will be subject oriented and the students will be preparing a hand written visit report which will be evaluated for allotting the grades. This will help the students to understand and have a feel of the production activities presently prevailing in the industry.

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : THIRD
SUBJECT TITLE : COMPUTER APPLICATION
SUBJECT CODE : ATN 143307

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
--	02*	--	--	--	--	--	--	--

Note:
During the semester from time to time, every student will be assigned a topic related to computer application which can help them in day to day work when they go to industry.

SASMIRA'S INSTITUTE OF MAN-MADE TEXTIES

TEACHING AND EXAMINATION SCHEME

DIPLOMA PROGRAMME MAN-MADE TEXTILE TECHNOLOGY (DMTT)

Implemented from 2014-2015

SEMESTER - IV

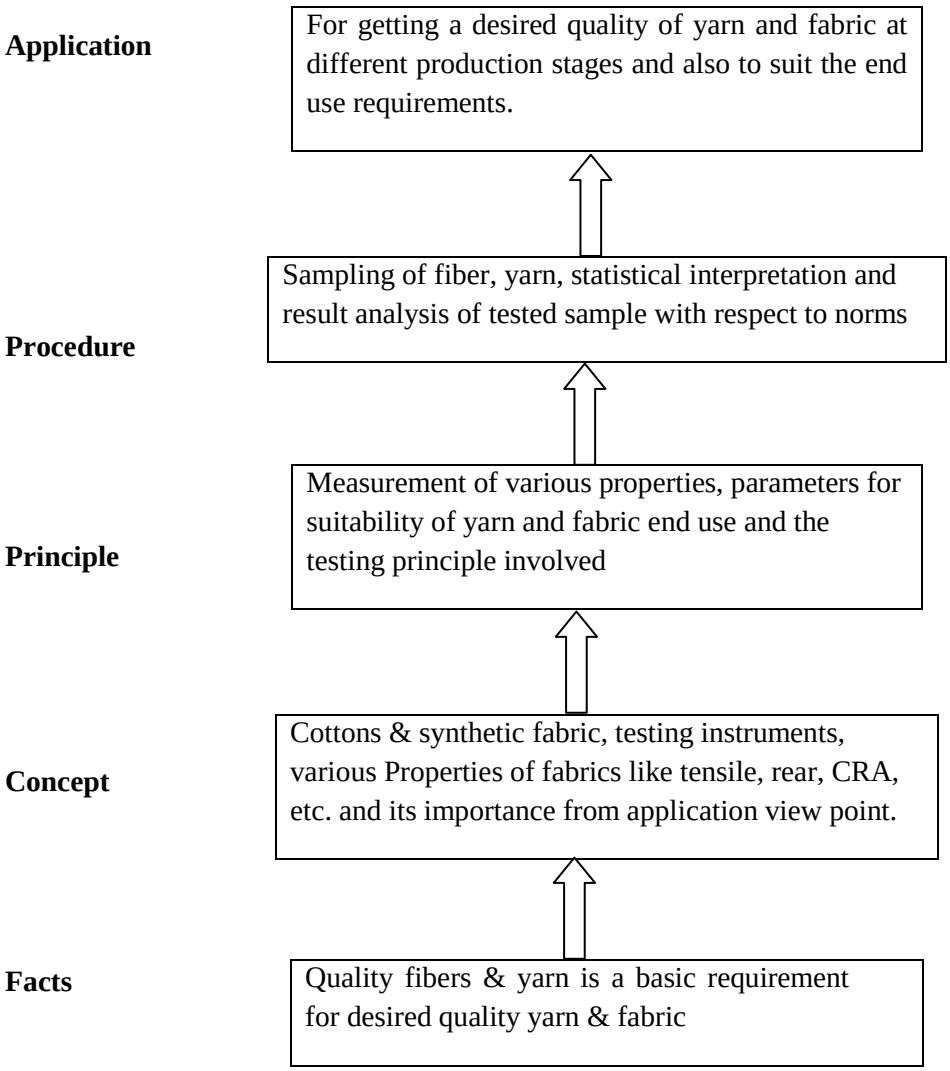
CODE	COURSE & TITLE	C/O	PRE-REQUISITE	TEACHING SCHEME			Progressive		Final Exam.			TOTAL
				L/T	PR	CR	TEST	TW	TH	PR	OR	
ATC 143401	Physical Testing of Textiles-II	C	ATC 143301	3	3	6	20	50	80	50	-	**200**
ATC 143402	General Engineering	C	Nil	2	-	2	20	-	80	-	-	**100**
CTT 142403	Yarn Manufacturing Technology-II	C	CTT 142302	3	3	6	20	50	80	50	-	**200**
CTT 142404	Fabric Manufacturing Technology-II	C	CTT 142303	3	3	6	20	50	80	50	-	**200**
CTT 142405	Compound Woven Structures-I	C	CTT 142304	3	3	6	20	50	80	50	-	**200**
CTT 142406	Textile Colour & Designing	C	Nil	1	3	4	-	100	-	-	-	**100**
ATN 143407	Social & Environmental Awareness	C	Nil	-	2*	-	-	-	-	-	-	-
ATN 143408	Industrial Visit	C	Nil	-	2*	-	-	-	-	-	-	-
TOTAL				**15**	**15**	**30**	**100**	**300**	**400**	**200**	**-**	**1000**

Internship of six weeks will be kept in the summer vacation and the report & viva of the same will be held in the V semester.

*Non Credit Subject

Course Details

Learning Structure: Physical Testing of Textiles - II



COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/ DIPLOMA IN MAN-MADE TEXTILE CHEMISTR / DIPLOMA IN KNITTING TECHNOLOGY
COURSE CODE : DMTT/DMTC/DKT
SEMESTER : FOURTH
SUBJECT TITLE : PHYSICAL TESTING OF TEXTILES-II
SUBJECT CODE : ATC 143401

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	03	06	03	80	20	50	50	200

RATIONALE

Physical Testing of Textiles course aims at providing understanding of physical properties of textile materials. Physical properties, their basic mechanism, methods of determination, units and applications in textile processes are outlined.

The subject physical Testing of Textiles–II deals with fundamentals of statistics, Quality standards, and different testing principle and Testing of Yarn and fabric properties. In this subject, student will be made fully aware of different quality standards and their importance during various stages of production of fabric and finishing.

General Objectives:

Students will be able to

1 Understand the correct sampling technique for testing of yarn and fabric.
2 Know the different yarn and fabric properties and their testing methods.
3 Interpret and Compare the test result with testing standards and provide the appropriate conclusion.

Physical Testing of Textiles-II Theory:

SECTION – I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Yarn Twist:** 1.1 Introduction to yarn Twist. 1.2 Definitions- Twist, Twist direction, balance twist, corkscrew twist, twist on twist, weft on twist. 1.3 Functions of twist in yarn structure, Amount of twist, effect of twist on fabric properties. 1.4 Relation between yarn number and twist per unit length, twist multiplier. Application of twist multiplier. 1.5 Sampling for twist test. 1.6 Yarn twist testing by- a) Single yarn twist tester, b) Optical method, c) Twist to break method, d) Twist contraction method, e) measurement of Twist in doubled yarns or plied yarns. 1.7 Pierce's formula for cotton spun yarn diameter and simple calculation.	08	14
2	**Yarn Evenness:** 2.1 Introduction and significance of yarn evenness. 2.2 Concept of variation. 2.3 Classification of variation, basic irregularity, expression of irregularity, addition of irregularity, irregularity index. 2.4 Short term, medium term and long term variation. 2.5 Yarn evenness measurement by- a) Cutting & Weighing method, b) Yarn evenness measurement by USTER, - Principle, working and feature. 2.6 Causes & remedies of yarn irregularity, interpretation of yarn irregularities. 2.7 Introduction to Uster Classimat Fault.	08	14
3	**Yarn Hairiness:** 3.1 Definition of yarn Hairiness. 3.2 Effect of hairiness on yarn and fabric. 3.3 Causes and remedies of hairiness. 3.4 Yarn Hairiness measurements by–a) Shirley Tester b) Uster Hairiness Tester.	04	06
4	**Yarn Friction Test:** 4.1 Introduction of yarn friction. 4.2 Importance of yarn friction. 4.3 Static and dynamic friction in yarn. 4.4 Measurements of yarn friction.	04	06
	TOTAL	24	40

SECTION – II			
Topic No.	**Contents**	**Hours**	**Marks**
5	**Testing of Fabric Quality Particulars:** 5.1 Sampling for fabric testing. 5.2 Measurement of fabric dimensions – Length, width, Thickness and fabric structure – EPI, PPI. 5.3 Cover factors and its measurement. 5.4 Yarn crimp, influence of yarn crimp on fabric properties, crimp testing by Shirley crimp tester. 5.5 Dimensional stability of the fabrics – factors causing dimensional instability, Methods of measuring dimensional stability.	04	08
6	**Fabric Serviceability:** 6.1 Definition of fabric serviceability. 6.2 Purpose of serviceability test. 6.3 Fabric wear and abrasion, types of abrasion. 6.4 Fabric Abrasion testing by – Martindale abrasion tester, assessment of abrasion result 6.5 Factors affecting abrasion resistance 6.6 Fabric Pilling-definition, causes and remedies for pilling, 6.7 Measurement of pilling by ICI pilling tester. 6.8 Fabric Snagging-definition and its measurement. 6.9 Fabric thermal conductivity	05	08
7	**Fabric Handle:** 7.1 Definition of fabric Handle. 7.2 Fabric stiffness and definition of bending length, flexural rigidity, bending modulus. 7.3 Cantilever principle for Stiffness test. 7.4 Stiffness measurement by a) Shirley stiffness tester, b) hanging loop method, 7.5 Crease resistance and crease recovery-measurement of crease recovery by Shirley crease recovery tester. 7.6 Fabric friction-measurement of fabric friction. 7.7 Introduction of Kawabata system and FAST.	05	08
8	**Fabric Strength:** 8.1 Importance of fabric tensile strength testing, 8.2 Definition-crimp interchange, waisting, fabric assistance. 8.3 Sampling preparation: Revelled strip, cut strip, grab method. 8.4 Fabric tensile strength tester-principle and working 8.5 Elmendorf tear strength tester- principle and working 8.6 Bursting strength-Hydraulic bursting strength tester 8.7 Fabric flammability and its measurements.	05	08
9	**Fabric Air and Water Permeability:** 9.1 Definition - air permeability, air resistance, air porosity. 9.2 Measurement of air permeability- Shirley air permeability tester. 9.3 Air permeability and fabric structure, 9.4 Definition- Water permeability, absorbency, shower proof, water proof, water repellent. 9.5 Measurement of water repellence by- a) wetting time test, b) drop penetration test, c) spray test d) bundensman test, e) hydrostatic head test.	05	08
	TOTAL	24	40

The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B

Group A: List of Experiments: Physical Testing of Textiles –II

1	Measurement of yarn twist
2	Measurement of Fabric thickness testing.
3	Measurement of Fabric GSM testing.
4	Measurement of Fabric cover factor
5	Determination of abrasion resistance of the fabric
6	Determination of bending length, bending modules, flexural rigidity of the fabric by Stiffness tester
7	Determination of crease recovery of the fabric
8	Determination of tearing strength of the fabric by Elmendorf tearing tester
9	Determination of % crimp of the yarn from the fabric
10	Measurement of fabric tensile strength

Group B: Solutions to the Assignments given in class.

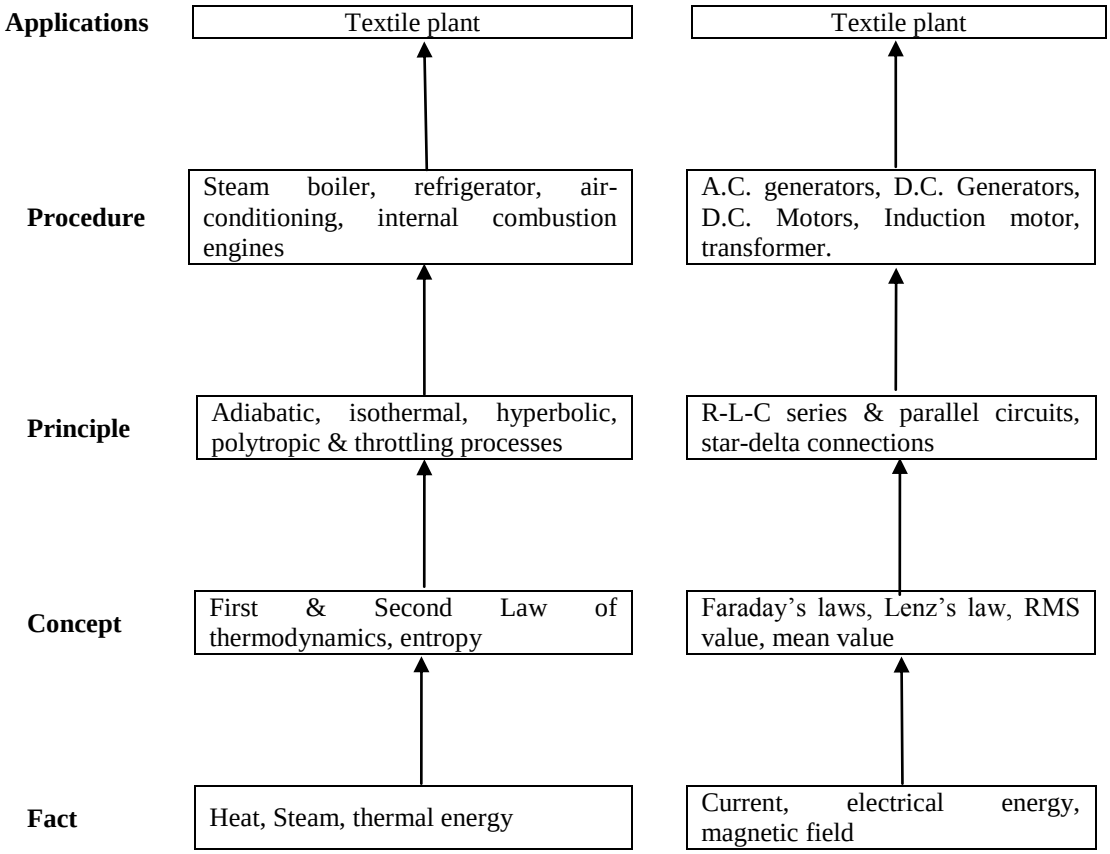
Assignment No.	Topic
1	Twist in Yarn
2	Evenness of yarn
3	Yarn Hairiness
4	Yarn Friction test
5	Testing of fabric quality particulars
6	Fabric serviceability
7	Fabric Handle
8	Fabric Strength
9	Fabric air permeability
10	Fabric water permeability

Note: For Assignment
1. Assignments should be solved in separate A-4 size journal.
2. Assignments will be assessed progressively.

References:

Sr. No.	Name of Book	Author	Publications
1	Principles of Textile Testing	J. E. Booth	Chemical Publishing Co.INC,New York
2	Physical Properties of Textile Fibers	W.E. Morton & J.W. Hearle	
3	Physical Testing of Textiles	B. P. Saville	Woohead Publishing Limited in association with The Textile Institute Abington hall,Abington, Cambridge England
4	Textile Testing, Physical, Chemical & Microscopic	John Skinkle	
5	Textile Testing	P.Angappan & R.Gopalakrishnan	SS Textile Inst,Coimbatore

Learning Structure: General Engineering



COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/
DIPLOMA IN MAN-MADE TEXTILE CHEMISTR /
DIPLOMA IN KNITTING TECHNOLOGY
COURSE CODE : DMTT/DMTC/DKT
SEMESTER : FOURTH
SUBJECT TITLE : GENERAL ENGINEERING
SUBJECT CODE : ATC 143402

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme			Examination Scheme					
L/TU	**P**	**CR**	**PAPER HRS**	**TH**	**Test**	**PR**	**TW**	**TOTAL**
02/--	--	02	03	80	20	---	---	100

RATIONALE

Textile industry is totally depending upon electrical as well as thermal energy for its functioning. This subject will impart the basic knowledge about the economical generation and efficient industrial utilization of electrical and thermal energy associated with its machineries.

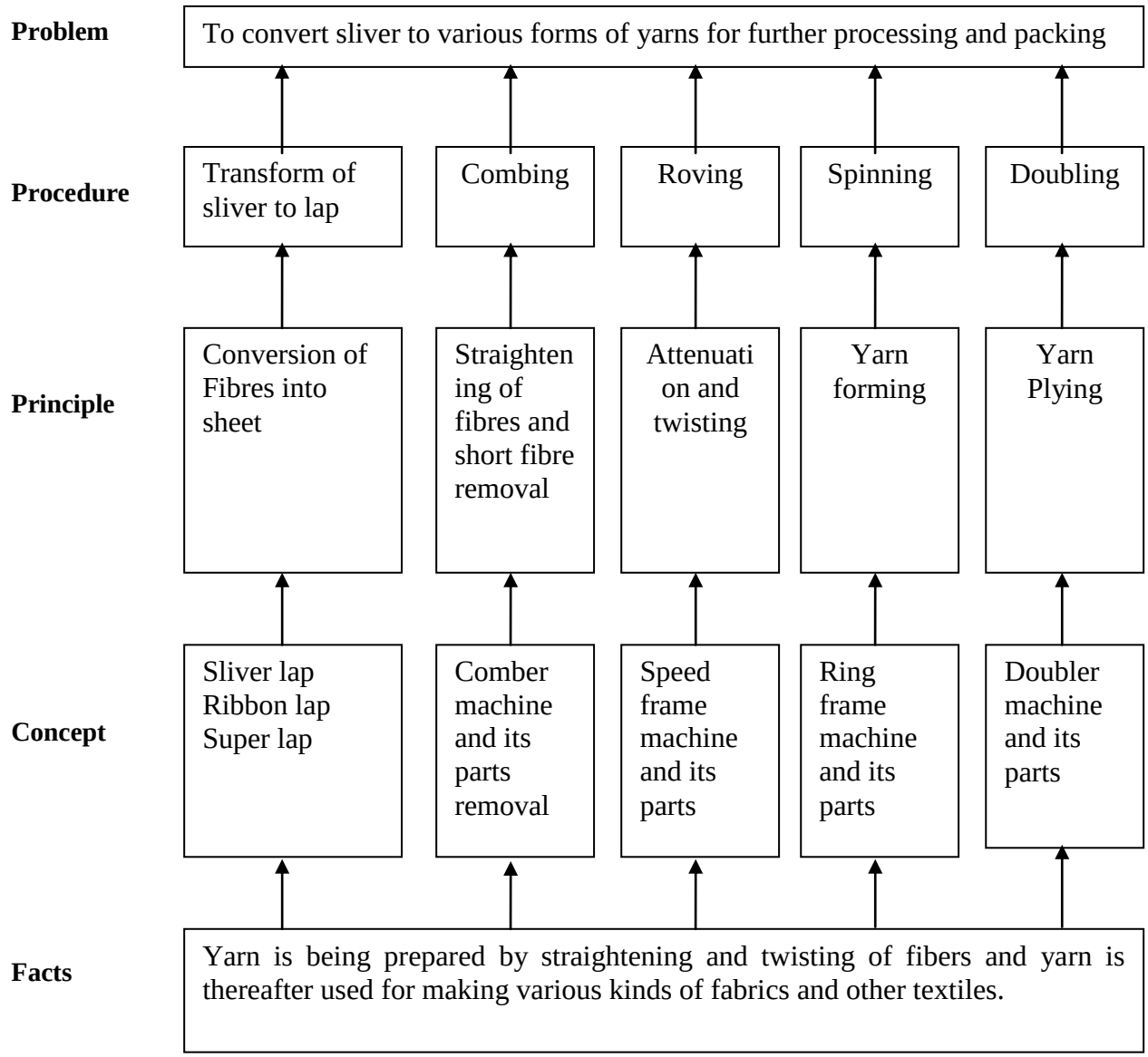
SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Thermal Engineering:** 1.1 Law of conservation of energy. First and second law of thermodynamics. 1.2 Claussius's and Kelvin Plank's statements. 1.3 Specific heats, their relationships and ratio. 1.4 Simple thermodynamic process such as constant volume, constant pressure, isothermal and adiabatic, hyperbolic, polytropic and throttling. (only introduction and P-V diagram)	02	05
2	**Formation and Properties of Steam:** 2.1 Important terms such as wet steam, dry steam, super heated steam, dryness fraction, sensible heat, enthalpy and specific volume of steam. 2.2 Steam table and its use. 2.3 Advantages of superheated steam.	02	06
3	**Steam Boiler:** 3.1 Classification, seletion, important terms and essentials of a good steam boiler. Fire tube and water tube boiler such as Cochron, Lancashire, Cornish, Bobcock and Wilcox boiler. 3.2 Boiler mounting such as water level indicator, pressure gauge, blow-off cock, safety valve, fusible plug and accessories such as feed pump, super heater, and economiser. (Only simple idea and functions; no construction details. Only diagram).	04	10
4	**Condenser:** 4.1 Introduction. Advantages of condensers in steam power plant. 4.2 Requirements of a steam condensing plant. 4.3 Classification of condensers and comparison.	02	04
5	**Refrigeration and Air Conditioning:** **Refrigeration:** 5.1 Introduction to air and vapour compression refrigeration. 5.2 Mechanism of refrigeration. **Air Conditioning:** 5.3 Introduction to air-conditioning. Factors of human comfort. 5.4 Equipments used in air conditioning cycle. 5.5 Air conditioning systems and classifications.	03	06
6	**Internal Combustion Engines:** 6.1 Introduction to internal combustion engines. 6.2 Main components of I.C. Engines. Sequence of operation. 6.3 Two stroke cycle engine. Four stroke cycle engine. 6.4 Advantages of two and four stroke cycle engines.	03	09
	TOTAL	16	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
7	**Electromagnetic Induction & Measuring Instruments:** **Electromagnetic Induction:** 7.1 Electromagnetism. Electromagnetic induction. Faraday's laws, Lenz's law, right hand rule and left hand rule. Right hand thumb rule. **Measuring Instruments:** 7.2 Types of secondary instruments. Essentials of indicating instrument. 7.3 Moving iron instruments. Attractive type and repulsive type moving iron instruments. Moving coil instruments such as permanent magnet moving coil instruments. 7.4 Hot wire instruments. Advantages and disadvantages.	03	07
8	**Alternating Current Theory & A. C. Generators:** **Alternating Current Theory:** 8.1 Alternating current. Frequency, amplitude, cycle, time period, Root Mean Square value (RMS value), average value, vector representation of A.C. 8.2 Simple dingle phase A.c. circuits containing resistance, inductance and capacitance in series. Combination of R-L-C. Simple numerical examples. **A. C. Generators:** 8.3 Introduction to three phase circuits. Star and delta connections. 8.4 Measurement of power in single and three phase circuits. Simple Numerical examples.	04	10
9	**D. C. Generators & D. C. Motors:** **D. C. Generators:** 9.1 Basic principle of D. C. Generator. Rectification. Working of D. C. Generator. 9.2 Practical D. C. Generator – parts and description. Types of D. C. Generator. Simple numerical examples. **D. C. Motors:** 9.3 Basic principle, construction and working of D. C. Motor. 9.4 Back emf in D. C. Motor. Significance of back emf. Torque in D. C. Motors. Necessity of motor starter. 9.5 Classification of D. C. Motors. Simple numerical examples.	06	15
10	**Induction Motor & Transformer:** **Induction Motor:** 10.1 Construction of induction motor. Working principle of induction motor. Motor starter. Squirrel cage and phase wound rotor. Frequency of rotor current f' = s.f. simple numerical examples. **Transformer:** 10.2 Single phase ideal transformer. Construction of transformer. Emf equation of transformer. 10.3 Voltage regulation in transformer. Transformer tests. Losses in transformer. Efficiency of transformer. Transformer on load and on no load. Simple numerical examples on single phase transformer.	03	08
	TOTAL	16	40

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	Mechanical Technology (Thermal Engineering)	R. S. Khurmi	S. Chand & Company Pvt. Ltd.
2	Applied Thermodynamics	Sarao & Rai	Satya Prakashan
3	Fundamentals of Electrical Engineering and Electronics	B. L. Theraja	S. Chand & Company Pvt. Ltd.
4	Elements of Electrical Engineering	B. R. Sharma	Acharya Book Depot
5	Worked Examples in Electrical Technology	B. L. Theraja	S. Chand & Company Pvt. Ltd.

Tree diagram of the subject area – Yarn Manufacturing Technology - II:



COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : FOURTH
SUBJECT TITLE : YARN MANUFACTURING TECHNOLOGY --II
SUBJECT CODE : CTT 142403

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	03	05	03	80	20	50	50	200

RATIONALE

In the third semester, Yarn Manufacturing – I dealt with the study of the preparatory part of the spinning process. In that part Blow Room, Carding and Drawing were studied.
In this fourth semester, Yarn Manufacturing-- II is a continuation of the detailed study of the spinning process. This subject covers the further part of the spinning process i.e Comber, Speed Frame, Ring Frame and Doubling processes. It covers the study of principles and description of these processes and functions of all machines and its parts with related information and skills.

General Objectives:

Students will be able to –

1. Understand the difference between carded and combed yarns.
2. Describe the various machines in combing and combing preparatory—construction, working, settings and other parameters.
3. Understand the Speed frame, Ring frame and doubling processes and machines with their gearing diagrams.
4. Calculate the speeds, drafts, cleaning efficiency, hanks and production of the different machines

Yarn Manufacturing Technology – II

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Study of comber lap preparation** 1.1 Objectives of comber lap preparation. Parameters of the process 1.2 Study of the construction and working of lap preparation machines—sliver lap, Ribbon lap, Lap Former, Super lap Former 1.3 Various sequence of machines for comber lap preparation—advantages and disadvantages of each sequence 1.4 Calculation related to production and draft	04	08
2	**Study of combing process** 2.1 Objectives of the combing process 2.2 Construction and working of comber, function of various elements of the machine 2.3 Combing cycle with reference to the numbers on the Index wheel 2.4 Study of important settings and its effects on the working. Gauges used for settings. 2.5 Types of combing—light, medium super and how it is achieved 2.6 Half lap construction and its cleaning 2.7 Developments in the combing process 2.8 Causes and remedies of defective production at Comber 2.9 Concept of fractionating efficiency 2.10 Calculation of production, noil percentage and draft	12	18
3	**Study of Speed Frame processes** 3.1 Objectives of the Speed frame process 3.2 Study of the construction and working of the Speed frame 3.3 Study of the creel, drafting system, flyers, bobbins, spindles, bobbin rail etc. 3.4 Study of the twisting and winding mechanism .Concept of bobbin leading. 3.5 Study of differential motion on Speed fram 3.6 Study of building motion on speed frame. 3.7 Change places on speed frame and changes as per mixing 3.8 Modern developments in speed frame 3.9 Causes of defective production and remedies 3.10 Calculation of draft, twist and production.	08	14
	TOTAL	24	40

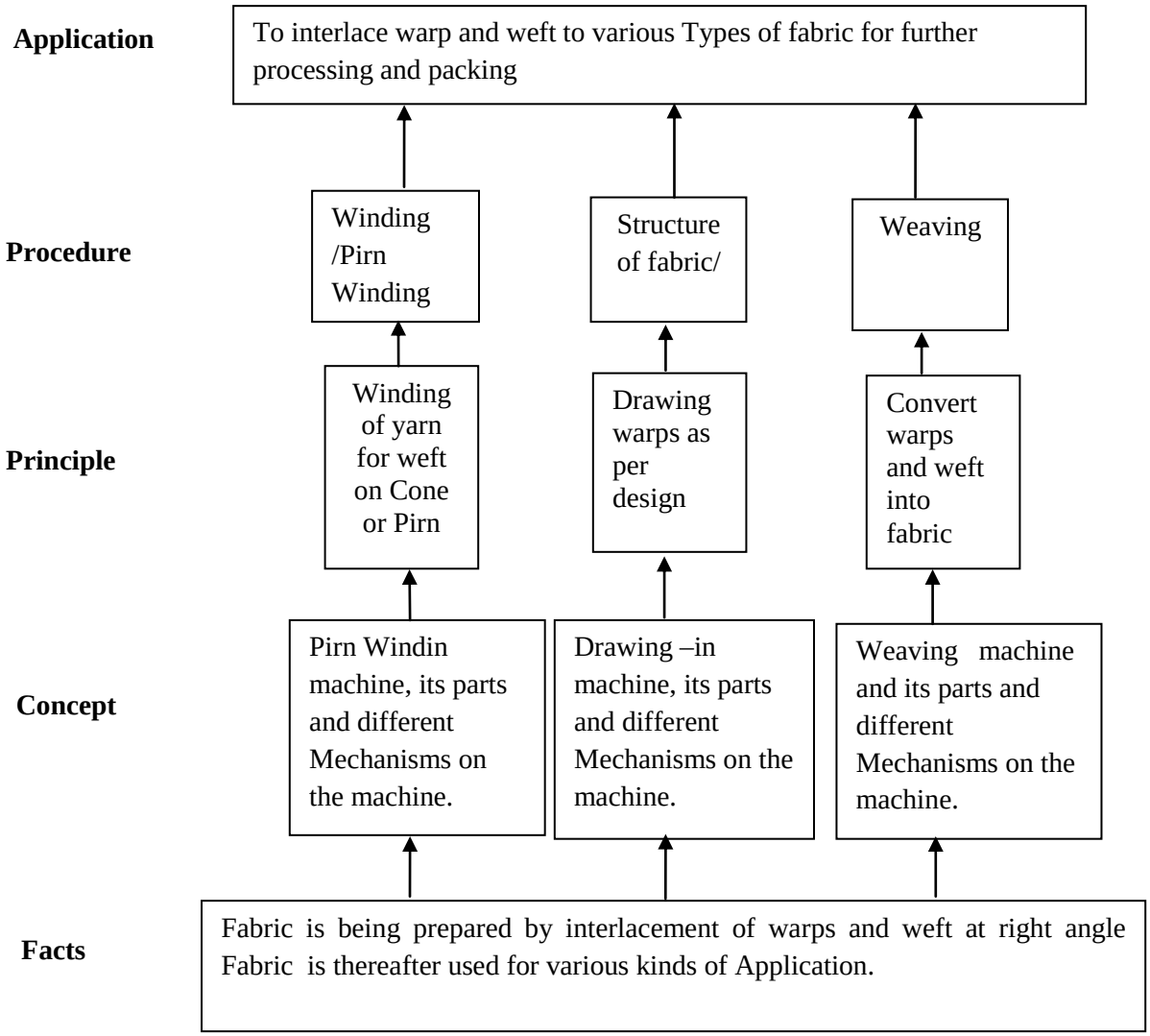
SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
4	**Study of Ring frame process** 4.1 Objectives of the Ring frame process 4.2 Construction and working of the Ring frame along with the passage of material 4.3 Study of the creel and the drafting systems on the ring frame 4.4 Study of the rings, travelers, lappet, lappet guide, balloon control rings 4.5 Study of spinning geometry—concept, spinning triangle, inclination of the drafting arrangement 4.6 Study of different builds of package—cop build, roving build, combination build, winding and building coils, chase length, ring rail movement. 4.7 Study of cop build building mechanism on ring frame 4.8 Study of changes to be made on ring frame for spinning of different yarn counts 4.9 Modern developments and features of modern ring frame 4.10 End breaks, roller lapping and other yarn faults-causes and remedies 4.11 Calculation of production, twist and draft on ring frame	16	24
5	**Study of Doubling process** 5.1 Objectives of the doubling process 5.2 Study of construction and working of doubling machine-Ring doubler 5.3 Comparison of wet and dry doubling 5.4 Effect of direction and amount of twist in doubling on properties of doubled yarn 5.5 Principles of fancy yarn production, different types of fancy yarns 5.6 Production of different types of fancy yarns—loop yarn, slub yarn, snarl yarn, gimp yarn. 5.7 Manufacturing of swing thread ,carpet yarn and Braided yarn 5.8 Modern fancy yarn manufacturing machine 5.9 Calculation of twist resultant count and production	08	16
	TOTAL	24	40

Practicals	
1	Study of construction and working of sliver lap machine including passage of material, settings and developments
2	Study of gearing diagram of sliver lap machine-calculation of speed, draft and production
3	Study of construction and working ofribbon lap machine including passage of material, settings and developments
4	Study of gearing diagram of ribbon lap machine—calculation of speed draft and production
5	Study of construction and working of combing machine including passage of material, settings and develpoements
6	Study of gearing diagram of combing machine – calculation of speed, draft and production
7	Study of construction and working of speed frame including passage of material, settings and development
8	Study of gearing diagram of speed frame—calculation of speed, draft, twist and production
9	Study of construction and working of ring frame including passage of material, settings and developments
10	Study of gearing diagram of ring frame—calculation of speed, draft, twist and production
11	Study of construction and working of doubling machine including passage of material, settings and developments.
12	Study of two-for-one twister

Assignments	
1	Draw neat labeled diagram showing the passage of material on the combing machine
2	Draw neat labeled diagram showing the passage of material on the Speed frame machine
3	Draw neat labeled diagram showing passage of material on the Ring frame machine
4	Draw neat labeled diagram of the two-for-one twister
5	Draw a neat labeled diagram of the ring doubling machine
6	Draw the threading systems on the wet doubler
7	Problems on Calculation of production of the combing preparatory machines
8	Problems on Calculation of production of the combing machine
9	Problems on calculation of production and twist of the speed frame machine
10	Problems on calculation of resultant count in doubling
11	Problems on calculation of production and twist of the ring frame machine.

References	
1	Cotton spinning – Ganesh and Garde
2	Cotton combing – Khare
3	Cotton ring spinning – Khare
4	Drawing and combing – W Klien
5	Ring spinning – W Klien
6	Manual of cotton spinning

Fabric Manufacturing Technology -II Learning Structure:



COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : FOURTH
SUBJECT TITLE : FABRIC MANUFACTURING TECHNOLOGY-II
SUBJECT CODE : CTT 142404

Teaching and Examination scheme

TEACHNING SCHEME			EXAMINATION SCHEME						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	TW	TOTAL
03	-	03	03	80	20	50	-	50	200

RATIONALE :

Fabric Manufacturing requires some essential preparatory processes i.e. winding, warping, sizing. These processes were dealt in 3rd semester subject "Weaving Preparatory Process". In this semester subject deals with subsequent processes to convert warp and weft threads into fabric form by interlacement on the loom. This subject intends to impart knowledge and skills in the area of weaving preparatory processes and weaving i.e. looming processes, pirn winding, various mechanisms on loom, fabric production, weight of warp and weight of weft calculations, fabric defects.

General Objectives:

Students will be able to

1 Understand formation of Pirn on Pirn winding Machines.

2 Understand different Mechanism on loom

3 Understand formation of Fabric on loom

SECTION – I

CHAPTER	TOPIC	HOURS	Marks
1	**Looming** 1.1 Drawing-in manual, mechanical, 1.2 Tying on , twisting-in, Different Knots 1.3 Basic concepts of design, draft & peg plan, Methods of fabric representation Basic weaves, 1.4 Denting Heald count calculations, Different Reed count & E.P.I calculations.	06	10
2	**Pirn winding** 2.1Objectives Features of ordinary and automatic Pirn winding machines Passage and Construction 2.2 factors affecting build of a pirn, Advantage and disadvantage of direct and rewound pirn. 2.3 Pirn winding production & efficiency calculations.	06	12
3	**Loom production calculation :** 3.1 Average reed space, average R. P. M. of loom shed, loom production, Average loom production ,3.2 Weight of warp and weight of weft calculation.	06	10
4	**Fabric defects** **4**,1 Classification of fabric, Fabric gradation 4.2Classification of cloth defects, warp defects, weft defects. Cloth defects, causes & their remedies	06	08
	TOTAL	24	40

SECTION – II

CHAPTER	TOPIC	HOURS	Marks
1	**Weaving** 1.1 Classification of loom. Different Parts of loom & its Function. **1.2 Primary motions**: - shedding, picking, beating-up., 1.2 Loom Timing , timing of primary motion in tappet loom, 1.3.1 Types of shedding Mechanism, Advantage of tappet shedding. 1.3.2 Construction of tappet shedding for different weaves. 1.3 Different type of shed - bottom closed shed, center close shed, open shed, semi open shed. Positive shedding Negative shedding early shedding & Late shedding. 1.4 Picking motion - over pick motion, cone under pick motion, side lever under pick motion, 1.5 shuttle flying out of loom. Shuttle trapping in shed, Beating up motion	12	20
2	2.1 **Secondary motions:** -Let-off:- negative, semi positive let-off motion 2.1.1. Take-up:- negative Take-up motion, five wheel & seven wheel intermittent Take-up motion, positive continuous Take-up motion, 2.2 Auxiliary motions:- centre weft fork motion , side weft fork motion , loose reed motion and fast reed, Motion, Timing and setting of loom motions 2.3 Factors affecting loom shed efficiency precautions & parameters for synthetic & blend weaving.	12	20
	TOTAL	24	40

Fabric Manufacturing Technology-II Practical:

1	Study of Drawing-in.
2	Study of pirn winding Machine
3	Study of passage of warp on plain loom cotton & silk.
4	Study of weaving preparatory& weaving accessories
5	Dismantling & refitting of over pick motion on plain cotton loom
6	Dismantling & refitting of cone under pick motion on silk loom. Speed & the work done calculation for Shuttle
7	Dismantling & refitting of beating motion on silk loom & cotton loom.
8	Dismantling & refitting of negative let off motion on plain cotton loom .
9	Dismantling & refitting of semi positive let off motion on silk loom.
10	Dismantling & refitting of seven wheel intermittent take up motion on cotton loom. Calculation of seven wheel take up motion
11	Dismantling & refitting of continuous take up motion on silk loom. Calculation of continuous take up motion.
12	Dismantling & refitting of side weft fork motion on silk loom
13	Dismantling & refitting of loose reed motion on cotton loom
14	Dismantling & refitting of fast reed motion on silk loom.

The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B

Group A: List of Experiments: Fabric Manufacturing-I Practical

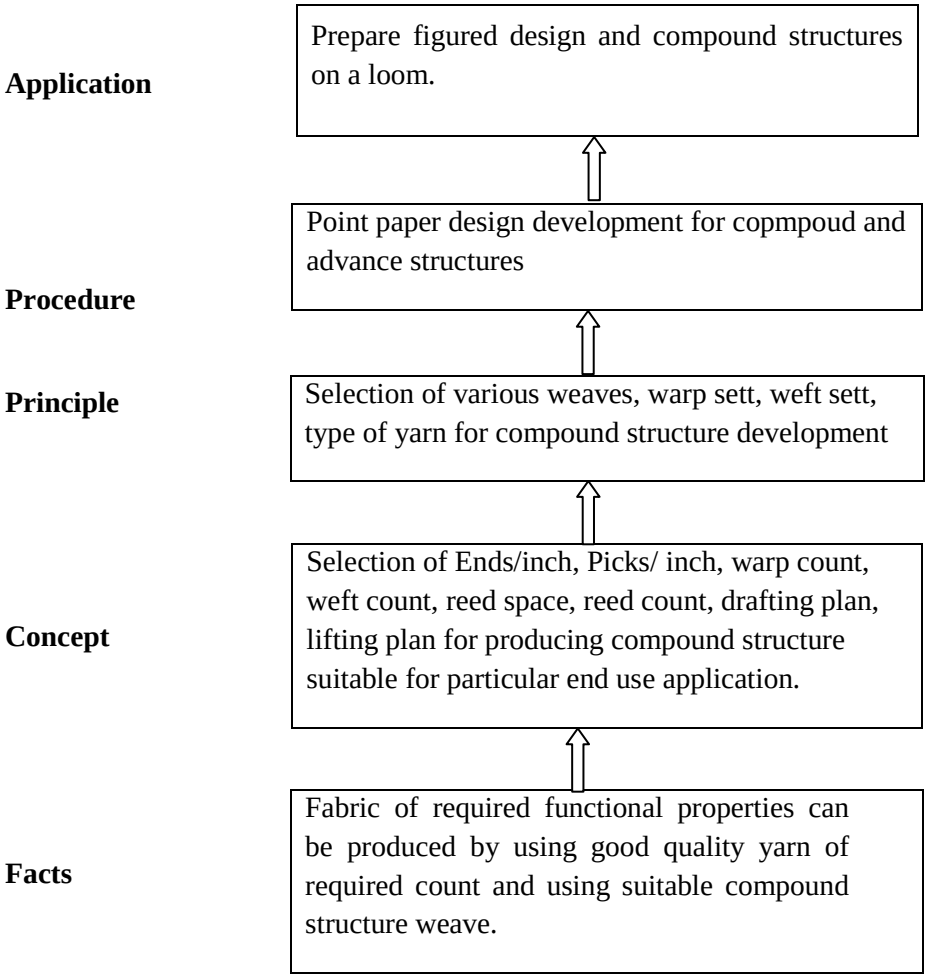
Group B: Solutions to the Assignments given in class.

Assignment Number	Topic
1	Different types of pirn, Factor affecting Build of pirn
2	Heald Count calculations
3	Reed Calculation E.P.I Calculation
4	Question on Design Draft & Peg plan Automatic Drawing in
5	Fabric Defects and its remedies
6	Loom Production Calculation
7	Average speed, Average RPM Average pick calculation
8	Types of shed and its advantages & Disadvantages
9	Construction of shedding tappet
10	Weaving for filament and blend yarn

REFERENCE BOOKS

1) Yarn to fabric conversion by Prof. P. R. Lord & Prof. M.H. Mohammed.
2) Hand book of weaving – Sabit Adanur.
3) Weaving mechanism Volume I by Prof. .N. N. Bannerjee
4) Weaving Calculation by Mr. R.Sengupta.
5) Mechanism of weaving - Thomas W. Fox.
6) Cotton yarn weaving - R.N. Kanongo . P.R. Roy.
7) Weaving machines, mechanism & managements Dr. M.K. Talukdar.
8) Plain weaving motion – Prof. K.T. Aswani.

Compound Woven Structures -I- Learning Structure:



COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : FOURTH
SUBJECT TITLE : COMPOUND WOVEN STRUCTURES – I
SUBJECT CODE : CTT 142405

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	03	06	03	80	20	50	50	200

RATIONALE

Compound Woven Structures - I course aims at providing in depth understanding of compound woven structures. It is aimed at making students thorough with the concepts of compound structures like Extra thread figuring, Backed cloths, double cloths the functional properties of these structures, their functional requirements for certain end use application, their usage in industry.

In this subject students are taught about designing of compound structures and their production on the loom. They are also taught the methods of ornamenting the fabric with attractive figures during weaving process. Elaborate and intricate woven structures are extensively used in various areas like ladies dress materials, furnishing fabric, upholstery. Students are taught about various types of bases used for creating jacquard designs, making elaborate jacquard designs on point paper, various types of jacquards, their figuring capacities, etc.

This course also encompasses technical aspects of fabric construction, ends/inch, picks/inch, warp count, weft count, crimp percentage, cloth cover factor etc. Study of fabric geometry help students to design a fabric suitable for a particular end use application.

General Objectives:

Students will be able to

1. Understand the concept of interlacement of extra warp and extra weft with base fabric.
2. Understand the concept of warp and weft backing used while constructing backed cloth, the advantage of different types of backing.
3. Understand different types of double cloths, to construct different types of double cloth, employing different stitching methods, to analyse different types of double cloths.
4. Understand the concept of stitching of two separate layers of double cloth, construct elaborate jacquard designs using different designing bases, do calculations of jacquard designing.
5. Understand various elements of cloth structures concept of fabric cover, calculate fabric cover
6. Understand the concept of maximum theoretical thread spacing,
7. Design a fabric suitable for a particular end use application.

SECTION I			
Topic No.	**Topic**	**Hours**	**Marks**
1	**Figuring with extra threads-** 1.1 pPrinciple of figuring with extra threads 1.2 MMethods of introducing extra figuring threads. 1.3 MMethods of disposing of surplus extra threads. 1.4 CComparison of extra warp and extra weft figuring. 1.5 EExtra warp figuring - 1.51 Continuous figuring with one extra warp. 1.52 Intermittent figuring with one extra warp. 1.53 Figuring with two extra warp threads. 1.54 Extra warp planting. 1.55 Stitching by means of special picks. 1.6 Extra weft figuring – 1.61 Continuous figuring with one extra weft. 1.62 Intermittent extra weft figuring, Chintzing. 1.63 Stitching by means of extra ends, 1.64 Continuous figuring with two extra wefts,	06	10
2	**Backed cloth-** 2.1 Concept of backed cloth, Objective of backing. 2.2 Weft backed cloth - reversible weft backed cloth, Methods of weft backing standard twill and hopsack weave. 2.3 Warp backed cloth - reversible warp back cloth, beaming and drafting of warp backed cloth, methods of warp backing standard weaves. 2.4 Method of selecting warp ties for irregular weaves. 2.5 Interchanging backed cloth 2.6 Treble wefted interchanging backed cloth. 2.7 Backed cloth with wadding threads 2.71 Weft backed warp wadded design 2.72 Warp backed weft wadded design	08	14
3	**Double cloth** 3.1 Classification of double cloth. 3.2 Self stitched double cloth. 3.21 Construction of double cloth with changing boxes at one side. 3.22 Reversible double cloth. 3.23 Beaming and drafting of self stitched double cloth. 3.24 Selection of suitable stitching positions. 3.25 Wadded double cloth – 3.251 Weft wadded double cloth. 3.252 Warp wadded double cloth. 3.3 Center stitched double cloth. 3.31 Center warp stitching, 3.32 Center weft stitching. 3.4 Interchanging double cloth - effect due to changes in the position of separating lift with continuous one and one colour arrangement.	10	16
	TOTAL	24	40

SECTION-II			
Topic No.	**Topic**	**Hours**	**Marks**
4	**LENO –** 4.1 Introduction to Leno weaving. 4.2 Different methods of producing Leno structures. 4.3 Types of yarns used for Leno structures and their end uses of Leno structures. 4.4 Different sheds formed in Leno weaving 4.5 Leno structure woven with flat steel doup with an eye. 4.6 Double doup assembly structure. 4.7 Counter leno. 4.8 Special lifts of standard ends. 4.9 Russian Cords. 4.10 Net leno. 4.11 Leno combined with other weaves and plain twill and sateen. 4.12 Simultaneous top and bottom douping. 4.13 Leno weaving with flat steel slotted doup. 4.14 Simple figures like twill, diamond effect with slotted doup.	10	18
5	**Madras Muslin** 5.1 Introduction to Madras Muslin structure. 5.2 Design, draft and peg plan of the Madras Muslin. 5.3 Mechanism required for weaving these structures.	4	6
6	**Fabric Geometry -** 6.1 Relation between yarn diameter and count of yarn, Numerical based on this relation. 6.2 Twist in yarn. 6.21 Angle of twist. 6.22 Relation between twist and twist factor. 6.23 Effect of twist on strength, extensibility and luster of yarn. 6.3 Warp cover factor, weft cover factor, Fabric cover factor. 6.4 Classification of plain cloth. 6.5 Geometry of square plain cloth & calculations based on the same. 6.6 Geometry of simple twill cloth & calculation based on the same. 6.7 Geometry of square hopsack cloth.	10	16
	TOTAL	24	40

Compound Woven Structures – I - Practical:

The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B

Group A: List of Experiments: Compound Woven Structures - I.

Sr. No.	List of Experiments
1	Analysis of Extra warp figuring sample.
2	Analysis of Extra weft figuring sample.
3	Analysis of Weft backed cloth sample.
4	Analysis of Warp backed cloth sample.
5	Analysis of Self stitched double cloth sample.
6	Analysis of Centre stitched double cloth sample.
7	Analysis of Interchanging double cloth sample.
8	Analysis of Plain all over Leno sample.
9	Analysis of Combination of plain & Leno sample.
10	Analysis of Counter Leno sample.
11	Analysis of Combination of plain & Counter cloth sample.
12	To calculate the cover factor of the given fabric sample.

References:

Sr No.	Name of Book	Author	Publication
1	Watson's Advance Textile Design (Compound Woven Structures)	Z. Grosicki	Butterworth & Co (Publisher) Ltd., London : 88, Kingsway, WC2B6AB
2	Woven Cloth Construction	A.T.C. Robinson	The Textile Institute, 10 Blackfriars street, Manchester : M35DR
3	Textile Designs	Nisbet	West Duxbury Manchester

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : FOURTH
SUBJECT TITLE : TEXTILE COLOUR & DESIGN
SUBJECT CODE : CTT 142406

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	**PR**	**CR**	**PAPER HRS**	**THEORY**	**SESSIONAL**	**PR**	**TW**	**TOTAL**
01	**03**	**04**	**-**	**-**	**-**	**-**	**100**	**100**

RATIONALE

To introduce students various aspects of colour and design and its application in textile so that they develop skills like activity, colour sense, developing a design etc.

General Objectives:

Students will be able to
1 understand colour sense of Design and pattern for different Textile materials

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	1.5 Colour : Additive and subtractive colours mixtures, light theory and pigment theory of colours. Primary, Secondary and Tertiary colours, Characteristics and visual association of colour. Colour harmony, colour modification, main attributes of colour..	16	50
	TOTAL	16	50

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
1	Design : The elements of design. Important principles of design. Composition of designs and arrangements of figures. Guidelines for fabric printing, colour modification in textile fabrics. Use of computer for textile designs.	16	50
	TOTAL	16	50

Textile Color and Design Practical:
Term Work consists of experiments from Group A & solutions to Assignments given in class from Group B

Group A: List of Experiments:

1	Study of Different Textures
2	Study of pigment theory and light theory of colour
3	Study of colour wheel
4	Grey scale, study of mind key, middle key, high key and contrast
5	Importance of cool colours and warm colours
6	Study of colour schemes – Acromatic, monocromatics
7	Study of colour schemes – Analogous, complementary
8	Different arrangements of stripe and check pattern
9	Colour and weave design
10	Designing Motifs – Natural, Geometric, Decorative and Abstract
11	Study of different bases for designs – Half drop, Diamond, Ogee and Satin
12	Designs for Dress Material
13	Designs for Traditional Wear
14	Designs for Kids wear
15	Designs for furnishing fabrics
16	Designs for T – Shirts
17	Designs for handkerchief

Group B: Solutions to the Assignments given in class.

Assignment Number	Topic
1	Collection of embroidery designs
2	Traditional Textiles of India
3	Traditional Textiles of China
4	Traditional Textiles of Japan
5	Use of Computer Aided in Textiles
6	Preparing a Portfolio

Note: For Assignment
1. Assignments should be solved in separate A-4 size journal.
2. Assignments will be assessed progressively.

References:

Sr No.	Name of Book	Author	Publication
1	Watson's Advance Textile Design (Compound Woven Structures)	Z. Grosicki	Butterworth & Co (Publisher) Ltd., London : 88, Kingsway, WC2B6AB
2	Textile Designs	Nisbet	West Duxbury Manchester

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : FOURTH
SUBJECT TITLE : SOCIAL AND ENVIRONMENTAL AWARENESS
SUBJECT CODE : ATN 143407

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
--	02*	--	--	--	--	--	--	--

Note:

During the semester time to time every student will be assigned a topic which can help them in understanding social and environmental issues of the society.

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : FOURTH
SUBJECT TITLE : INDUSTRIAL VISIT
SUBJECT CODE : ATN 143408

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
--	02*	--	--	--	--	--	--	--

Note:

During the semester from time to time, all the students will be taken for industrial / educational visits to relevant industries so as to understand the implication of theory and the practical in bulk production. The visits will be subject oriented and the students will be preparing a hand written visit report which will be evaluated for allotting the grades. This will help the students to understand and have a feel of the production activities presently prevailing in the industry.

TEACHING SCHEME
AND
EXAMINATION SCHEME
V & VI SEMESTER
SYLLABUS
DMTT DEPARTMENT

SASMIRA'S INSTITUTE OF MAN-MADE TEXTILES
Sasmira, Sasmira Marg, Worli, Mumbai-400 030

COURSE STRUCTURE, TEACHING & EXAMINATION SCHEME & SYLLABUS (SCHEME – 2)

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT) / DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT) AND DIPLOMA IN KNITTING TECHNOLOGY (DKT)
Implemented from Academic Year 2014-15

Guidelines for Subject Code

13. The Program DMTT/DMTC/DKT each is divided into five levels.

Level	Category	Code
1	Science and Humanities	SH
2	Core Technology	CT
3	Applied Technology	AT
4	Diversified Technology	DT
5	Management	MT

14. The code for common subject, DMTT, DMTC, DKT and Non credit subject are

Common subject	C
Textile Technology	T
Textile Chemistry	X
Knitting Technology	K
Non Credit Subject	N

15. The subject code presently used for the subject English is SHC1101.
    (k) Here "SH" represents the category Science & Humanities.
    (l) "C" represents that the subject is common for DMTT/DMTC/DKT.
    (m) The next digit "1" represents Level 1.
    (n) The next digit "1" represents Semester 1.
    (o) The last two digits "01" represent serial number of the subject.
16. We continue this coding system with simple addition of "14" signifying year of revision of curriculum. Accordingly, subject code for English is now SHC141101.
17. Another example: Existing subject code for Engineering Graphics is ATC3206. This subject belongs to Applied Technology (Level 3) and is common for DMTT/DMTC/DKT-II. The new subject code would be ATC143207.
18. Non credit subject will carry grade as
    A = Excellent, B = Very good, C = Good and D = Poor

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)
SUMMARY SHEET OF LEVELWISE COURSE STRUCTURE

AND

TEACHING & EXAMINATION SCHEME (SCHEME – 2)
SEMESTER V AND SEMESTER VI

Level	Title	C	O	Teaching Scheme			Examination Scheme					Total
				L/TU	P	Total	Progressive		Final exam			
							Test	TW	TH	PR	OR	
1	Science & Humanities	--	--	--	--	--	--	--	--	--	--	--
2	Core Technology	06	--	**18**	**18**	**36**	**120**	**300**	**480**	**300**	**-**	**1200**
3	Applied Technology	06	--	**6**	**6**	**12**	**40**	**100**	**160**	**--**	**100**	**400**
4	Diversified Technology	03	--	**3**	**6**	**9**	**20**	**100**	**80**	**-**	**100**	**300**
5	Management Courses	01	--	**3**	**--**	**3**	**20**	**--**	**80**	**--**	**--**	**100**
	TOTAL			**30**	**30**	**60**	**200**	**500**	**800**	**300**	**200**	**2000**

Notation:

12. L = Lecture
13. TU = Tutorial
14. P = Practical
15. Test = Sessional Test
16. TW = Term Work
17. TH = Theory paper
18. PR = Practical Exam
19. OR = Oral Exam
20. C = Compulsory subject
21. O = Optional subject
22. N (or *) = Non credit subject

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)

LEVELWISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER V AND SEMESTER VI

Level - 1 SCIENCE & HUMANITIES

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
				L/ TU	P	CR	Progressive		Final exam			
							Test	TW	TH	PR	OR	
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
	TOTAL			--	--	--	--	--	--	--	--	--

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)

LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER V AND SEMESTER VI

Level - 2 CORE TECHNOLOGY

Subject Code	Subject Title	C/ O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
				L/ TU	P	CR	Progressive		Final exam			
							Test	TW	TH	PR	OR	
CTT 142502	Yarn Manufacturing Technology- III	C	CTT14 2403	3	3	6	20	50	80	50	-	**200**
CTT 142503	Fabric Manufacturing Technology-III	C	CTT14 2404	3	3	6	20	50	80	50	-	**200**
CTT 142504	Compound Woven Structure-II	C	Nil CTT14 2405	3	3	6	20	50	80	50	-	**200**
CTT 142603	Yarn Manufacturing Technology-IV	C	CTT 142302	3	3	6	20	50	80	50	-	**200**
CTT 142604	Fabric Manufacturing Technology-IV	C	CTT 142303	3	3	6	20	50	80	50	-	**200**
CTT 142605	knitting Technology	C	Nil	3	3	6	20	50	80	50		**200**
	TOTAL			**18**	**18**	**36**	**120**	**300**	**480**	**300**	-	**1200**

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)
LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER V AND SEMESTER VI

Level - 3 APPLIED TECHNOLOGY

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
				L/ TU	P	C R	Progressive		Final exam			
							Test	TW	TH	PR	OR	
ATC 143501	Technical Textiles	C	NIL	3	0	3	20	--	80	--	--	100
ATT 143506	Seminar and Inplant Training Repor	C	NIL	--	3	3	--	50	--	--	50	100
ATN 143507	Industrial Visit	C	NIL	--	2*	-	--	--	--	--	--	--
ATC 143602	Textile Mill Planning Management	C	NIL	3	--	3	20	--	80	--	--	100
ATT 143606	Project	C	Nil	--	3	3	--	50	--	--	50	100
ATN 143607	Industrial Visit	C	NIL	--	2*	-	--	--	--	--	--	--
	TOTAL			**6**	**6**	**12**	**40**	**100**	**160**	**--**	**100**	**400**

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)
LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER V AND SEMESTER VI

Level - 4 DIVERSIFIED TECHNOLOGY

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
				L/TU	P	CR	Progressive		Final exam			
							Test	TW	TH	PR	OR	
DTT 144505	Garment Manufacturing Technology	C	Nil	3	-	3	20	-	80	-	-	**100**
DTC 144508	Process Control in Textile Processing	O	Nil	-	3	3	-	50	-	-	50	100
DTC 144509	Man-made Fibre Manufacturing	O	Nil	-	3	3	-	50	-	-	50	100
DTC 144510	Knit Product Development	O	Nil	-	3	3	-	50	-	-	50	100
DTC 144511	Entrepreneur ship Development	O	Nil	-	3	3	-	50	-	-	50	100
DTC 144608	Computer Colour Measurement	O	Nil	-	3	3	-	50	-	-	50	100
DTC 144609	Narrow Fabric Manufacturing Technology	O	Nil	-	3	3	-	50	-	-	50	100
DTC 144610	Production Planning and Control	O	Nil	-	3	3	-	50	-	-	50	100
DTC 144611	Electronics in Textiles	O	Nil	-	3	3	-	50	-	-	50	100
	TOTAL			**3**	**6**	**9**	**20**	**100**	**80**	**-**	**100**	**300**

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)

LEVEL WISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER V AND SEMESTER VI

Level - 5 MANAGEMENT COURSES

Subject Code	Subject Title	C/O	Pre-requisite	Teaching Scheme			Examination Scheme					Total
				L/ TU	P	CR	Progressive		Final exam			
							Test	TW	TH	PR	OR	
MTC 145601	Merchandising Management	C	NIL	3	--	3	20	--	80	--	--	100
	TOTAL			**3**	**--**	**3**	**20**	**--**	**80**	**--**	**--**	**100**

DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY (DMTT)

SEMESTERWISE COURSE STRUCTURE AND TEACHING & EXAMINATION SCHEME (SCHEME – 2)
SEMESTER V AND SEMESTER – VI

Semester	No. of Theory Papers	C	O	Teaching Scheme			Examination Scheme					
				L / TU	P	CR	Progressive		Final exam			Total
							Test	TW	TH	PR	OR	
Semester-5	05	07	01	12	18	30	100	250	400	150	100	**1000**
Semester-6	05	07	01	15	15	30	100	250	400	150	100	**1000**
TOTAL	**10**	**14**	**02**	**27**	**33**	**60**	**200**	**500**	**800**	**300**	**200**	**2000**

SASMIRA'S INSTITUTE OF MAN-MADE TEXTIES
TEACHING AND EXAMINATION SCHEME
DIPLOMA PROGRAMME MAN-MADE TEXTILE TECHNOLOGY (DMTT)
Implemented from 2014-2015
SEMESTER -V

(Duration: 16 weeks)

CODE	COURSE & TITLE	C/O	PRE-REQUISITE	TEACHING SCHEME			EXAM SCHEME (Marks)					TOTAL
				L/T	PR	CR	Progressive		Final Exam.			
							TEST	TW	TH	PR	OR	
ATC 143501	Technical Textiles	C	Nil	3	-	3	20		80	-	-	**100**
CTT 142502	Yarn Manufacturing Technology- III	C	CTT142403	3	3	6	20	50	80	50	-	**200**
CTT 142503	Fabric Manufacturing Technology-III	C	CTT142404	3	3	6	20	50	80	50	-	**200**
CTT 142504	Compound Woven Structure-II	C	CTT142405	3	3	6	20	50	80	50	-	**200**
DTT 144505	Garment Manufacturing	C	Nil	3	-	3	20	-	80	-	-	**100**
ATT 143506	Seminar & In-plant Training Report	C	Nil	-	3	3	-	50	-	-	50	**100**
ATN 143507	Industrial Visit	C	Nil	-	2*	-	-	-	-	-	-	**00**
DTC 144508-11	Elective Subject	O	Nil	-	3	3	-	50	-	-	50	**100**
TOTAL				**15**	**15**	**30**	**100**	**250**	**400**	**150**	**100**	**1000**

Elective Subject (Any One)

CODE	COURSE & TITLE	C / O	PRE-REQUISITE	TEACHING SCHEME			EXAM.SCHEME (Marks)					TOTAL
				L/T	P	CR	**Progressive**		Final Exam.			
							TEST	TW	TH	PR	OR	
DTC 144508	Process control in textile Processing	O	Nil	-	3	3	-	50	-	-	50	100
DTC 144509	Man-made fibre Manufacturing	O	Nil	-	3	3	-	50	-	-	50	100
DTC 144510	Knit product Development	O	Nil	-	3	3	-	50	-	-	50	100
DTC 144511	Entrepreneurship Development	O	Nil	-	3	3	-	50	-	-	50	100

* Non Credit subject

Course Details

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOG /DIPLOMA IN MAN-MADE TEXTILE CHEMISTRY/DIPLOMA KNITTING TECHNOLOGY
COURSE CODE : DMTT/DMTC/DKT
SEMESTER : FIFTH
SUBJECT TITLE : TECHNICAL TEXTILES
SUBJECT CODE : ATC 143501

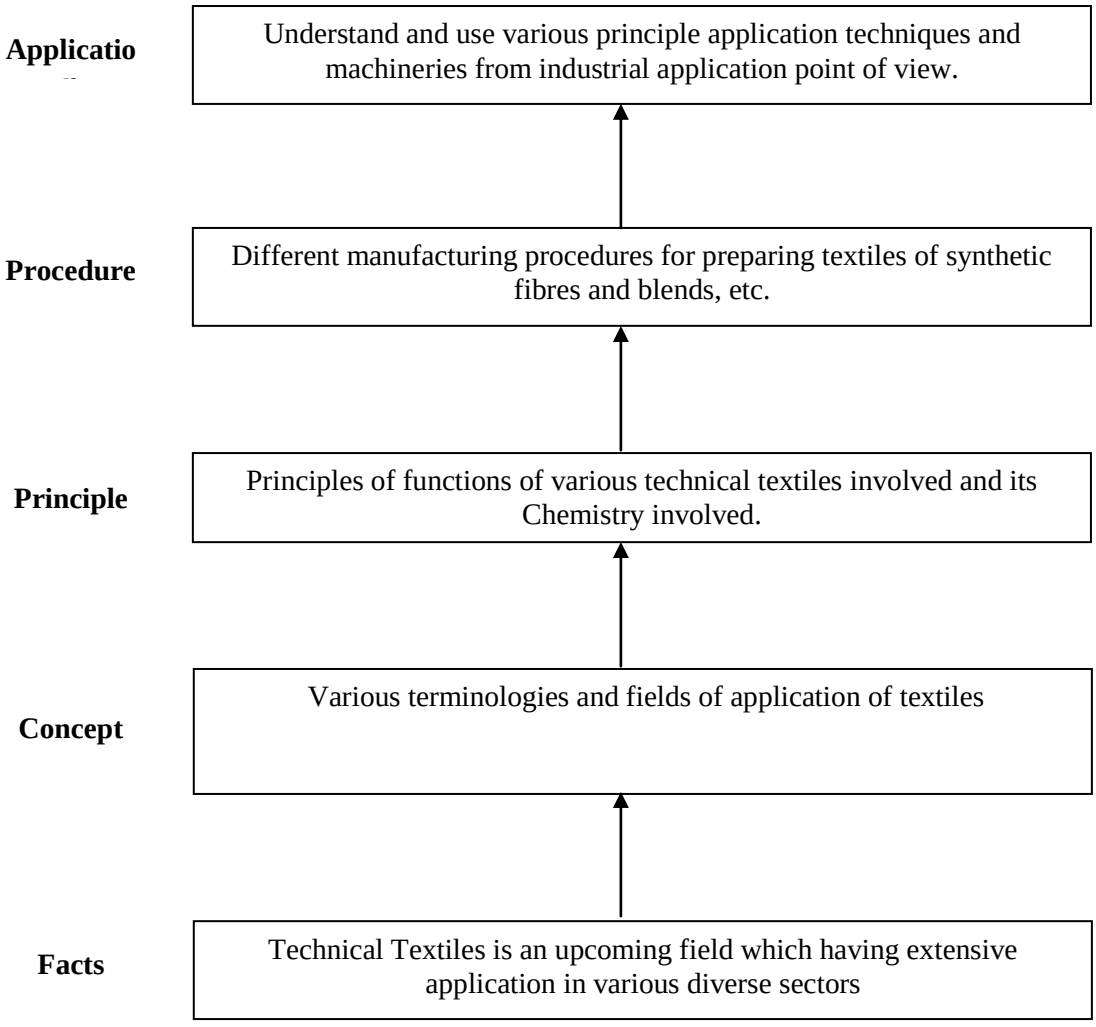
Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	-	03	03	80	20	-	-	100

RATIONALE

In the modern world, the application of textiles is no more limited to apparel. With increasing industrialization, textiles are being increasingly used for industrial purposes. Apart from woven and knitted fabric non-woven fabrics are being used in industrial applications. Therefore this subject intends to impart the students the knowledge of the production of non-woven and the various applications of textiles industry.

Learning Structure: Technical Textiles



SECTION – I

CHAPTER	TOPIC	HOURS	Marks
1	**Introduction to Technical Textiles**; Definition ,Scope, classification and Applications of Technical textile , Difference between Industrial Textiles and other textiles	04	08
2	**Production of Technical Textiles,**- Weaving technique, Knitting technique, Non-woven technique.	03	04
3	**Finishing of Technical Textile**-Mechanical finishing Technique, chemical process, heat setting	03	04
4	**Non-woven fabric**-definition, classification and Applications. Stages in the manufacture of non-woven - web preparation, web formation- Web and its types-Parallel laid, cross laid, random laid web. Non-woven manufacturing methods-Air laying, wet laying, dry laying, spun laying, flash spinning, melt-blown, carding method. Web bonding method-Mechanical bonding-Needle punching, stich bonding, Hydro-entanglement. Chemical bonding-different chemical bonding method its advantages and disadvantages Thermal bonding- different chemical bonding method its advantages and disadvantages	07	12
5	**Geo-Textile**-Definition, classification of Geo-textile Function of geo-textile-Separation, filtration, Drainage and Reinforcement. Types of Geo-Textile-Woven,Non-woen,knitted,Net,Grid,Mats,Stripes,Webs,Ties,Bio-degradable Geo-Textiles. Uses of geo-Textile in-Non-paved Road, paved Road, Crack protection, Railway work, High-way drainage, Rainfall erosion control, soil erosion control, river-bed ,canal and sea-bed erosion control	07	12

SECTION – II

CHAPTER	TOPIC	HOURS	Marks
1	**Medical Textiles** – Introduction, Classification of Medical textiles, characteristics of materials used in medical textiles. Implantable medical Textile, Bandages-Types and its application, dressings- Types and its application, Extracorporeal medical textile, Surgical stitching threads, different medical textile in Healthcare and Hygiene product introduction to Tissue engineering.	04	08
2	**Coated and laminated textiles**-Definition, Fibre and fabrics used for coating, polymer and adhesive used in coating, two coating approaches – liquid coating and solid coating, methods of coating. Applications of coated textiles. Laminated Textile-Definition, Rigid plastic laminates and flexible film laminates, methods of laminating. Application of laminated Textiles.	06	10

3	**Filtration Textile –** Introduction, principle of filtration, Textiles in dry filtration and its application, Textiles in Wet filtration and its application - fibres and fabrics for filtration, Testing of filter fabrics. **Tyre-cord Fabrics** - Fabrics used in different parts of the tyre radial tyre, cross laid tyre. Fibres and fabrics used in tyres. Requirements of fabrics, processing of tyre-cord fabrics	05	08
4	**Defence Textiles-**Textiles in defence application – Major requirement of Fibres and Fabrics for defence Physical properties of textile for defence in-Protective clothing, Environmental, camouflage, ballistic protective properties, biological and chemical warfare protection properties.	04	06
5	**Other Technical Textile** in-Electronics-requirement of fibres and its application .Banners and flags-fibre requirement, Agriculture Textile, Textile reinforce product-fibre requirement ,transportation ,conveyor and power transmission belt, hose pipe , & Home Textiles, applications and pre-requisites of each type of textile material.	05	08

ASSIGNMENTS

- Students should complete assignments given by the faculty on the above topics from time to time.
- Students have to write it in A4 size notebook
- Continuous assessment of assignments will be done.
- **Assignment marks** Assignments will be evaluated on regular basis and will be averaged with the Sessional marks.

REFERENCES

1. Industrial Textiles - Jarmila Seclova (Editor)
2. Wellingdion Sears Handbook of Industrial Textiles
3. Encyclopedia of Man-Made Textiles
4. Geotextiles - NWM John
5. Non-woven Bonded Fabrics - J. Lunenschloss & W. Albrecht.

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : FIFTH
SUBJECT TITLE : YARN MANUFACTURING TECHNOLOGY --III
SUBJECT CODE : CTT 142502

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	03	05	03	80	20	50	50	200

Rationale :

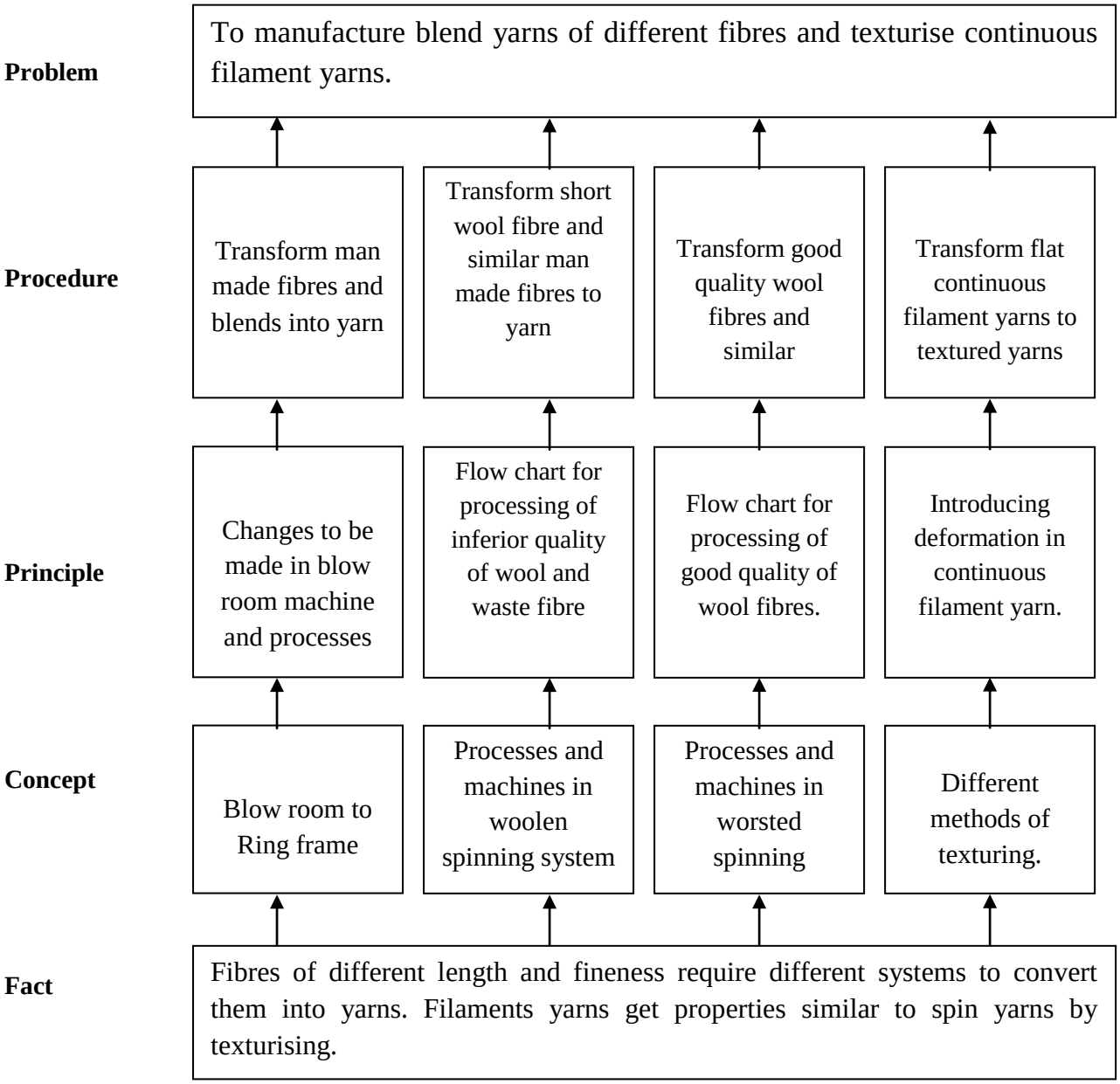
In the second year, Yarn Manufacturing Technology I and II dealt with the Spinning preparatory processes and ring Spinning with doubling. In this semester, Yarn Manufacturing Technology II in a detailed study of processing man made fibres on the cotton, wooller and worsted spinning systems study of texturising – principles processes and end uses are also studied in this subject.

General Objectives :

Students will be able to -

1. Draw flow charts for spinning of various blends on the cotton, woolen and worsted systems.
2. Understand the changes to be made at the different processes for spinning of different fibres and blends.
3. Descirbe the various process and machines in wollen and worsted systems of spinning.
4. Understand the concept of texturing – Machines, processes and parameters affecting those processes.

Tree diagram of the subject area – Yarn Manufacturing Technology III



Yarn Manufacturing Technology III Theory

	Section I		
Topic No.	**Contents**	**Hours**	**Marks**
1.	**Blending** 1.1 Properties of man made staple fibres. 1.2 Objectives of Blending. 1.3 Methods of Blending. 1.4 Evaluation of blends. 1.5 Selection of blend constituents.	05	08
2.	**Blow room – Processing of man made fibres** 2.1 Sequence of machines. 2.2 Speeds and settings. 2.3 General consideration. 2.4 Problems encountered in processing.	04	06
3.	**Carding – processing of man made fibres** 3.1 Speeds and settings. 3.2 Card clothing – flats, cylinder 3.3 General consideration 3.4 Problems in processing	04	06
4.	**Draw frame – processing of man made fibres** 4.1 Speed and settings. 4.2 Roller settings and draft distribution 4.3 General consideration 4.4 Blending Draw frame. 4.5 Roller lapping – causes and remedies	04	06
5.	**Speed Frame – Processing of man made fibres** 5.1 Drafting system – settings, roller weighing draft distribution 5.2 Twisting and winding 5.3 Bobbin building 5.4 General consideration	03	06
6.	**Ring Frame – Processing of man made fibres** 6.1 Drafting system – settings, weighing draft distribution 6.2 Twist setting. 6.3 General consideration. 6.4 Yarn faults – Causes and remedies.	04	08

	SECTION II		
Topic No.	**Contents**	**Hours**	**Marks**
7.	**Texturising** 7.1 Objectives and principle. 7.2 Types of textured yarns and different methods of texturising. 7.3 False twist texturising. 7.4 Air texturising. 7.5 Parametres affecting texturising.	10	18
8.	**Woollen System of spinning.** 8.1 Flow chart. 8.2 Rag polling and garneting 8.3 Woollen carding machine. 8.4 Woollen ring spinning.	6	10
9.	**Worsted system of spinning** 9.1 Difference between flow chart of operations. 9.2 Flow chart of operations. 9.3 Worsted carding. 9.4 Grilling 9.5 Combing 9.6 Ring Spinning	8	12

PRACTICALS

1. Practical related to processing of man-made fibres and blends on short staple spinning system (Blow Room to Ring spinning).
2. Production sequence of woolen and worsted spinning.

REFERENCE BOOKS

1. Spinning of Man-made and blends by Prof. K.R. Salhotra.
2. Wool Handbook Part-I.
3. A Guide to crimping and Texturising by Mr. Rao & Talole, Mantra publication.
4. Texturizing by Monsanto.
5. Introduction to textile by T. Ishida.
6. Woolen Spinning by Mr. Allan Brearly.
7. Worsted Spinning by Mr. Allan Brearly.

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : FIFTH
SUBJECT TITLE : FABRIC MANUFACTURING TECHNOLOGY-III
SUBJECT CODE : CTT 142503

Teaching and Examination scheme

TEACHNING SCHEME			EXAMINATION SCHEME						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	TW	TOTAL
03	-	03	03	80	20	50	-	50	200

RATIONALE

The ornamentation of fabric is done by the constant variation in number of warp threads in the top and bottom lines of shed in successive picks, so as to conceal certain threads to form an effective pattern on the face or back of the fabric. This is accomplished by means of Dobbies and Jacquard.

The ornamentation of fabric is also done by the introduction of more than one colour, count or quality in the warp or weft or both. The ornamentation in the weft is done by means of multiple box motion.

This subject intends to impart knowledge and skills in the area of ornamentation of fabrics when the fabric is manufactured by the use of Dobbies, Jacquard and multiple box motion.

FABRIC MANUFACTURING TECHNOLOGY-III THEORY

	SECTION – I	Lectures	Marks
1	Study of Dobby- Scope of dobby, uses of dobby, classification of dobby, double lift dobby, Keighley dobby, climax dobby. Double lift Dobby, timing and setting, method of lattice pegging, mounting climax dobby on loom, and causes of jack-missing and stitching.	11	18
2	Study of two cylinders cross border dobby, Northrop negative cam dobby. Staubli cam negative dobby. Staubli positive cam dobby Paper pattern dobby, Rotary dobby and electronic dobby	06	10
3	Study of Drop-box motions, timing and setting on silk loom. Pick-and-Pick loom 4x4 pick at will box motion on silk loom. Pattern cards for 4x4 Pick-at-will box motion. Circular non-skip box motion, Diggle chain negative box motion .	07	12

	SECTION – II	Lectures	Marks
1	Principles of jacquard shedding, types of jacquard, sizes of jacquard, figuring capacity of Jacquard. Systems of harness mounting , Norwich system & London system. Single lift jacquard, Timing of single lift jacquard, drive for single lift jacquard. Open-shed jacquard, centre shed jacquard. Double lift single cylinder jacquard. Independent drive for double lift single cylinder jacquard.	11	15
2	Double lift double cylinder jacquard, chain drive for double lift jacquard, jacquard mounting. Timing of double lift jacquard.,	07	10
3	Cross border jacquard, Tie-up, first or leading hook in jacquard. Process of jacquard designing sketching, designing on point paper card cutting or transferring the design on to pattern cards. Piano card cutter method of card cutting, card lacing. Vincenzy jacquard , verdol jacquard, self twilling jacquard Electronic jacquard	06	15

PRACTICALS

1) Dismantling & refitting of climax dobby.
2) Study of lattice pegging left hand dobby.
3) Study of lattice pegging right hand dobby.
4) Study of two cylinder cross border dobby.
5) Study of 4x4 pick-at will box motion on silk loom.
6) Preparation of pattern chain for 2x1 drops box motion.
7) Study of double lift double cylinder jacquard
8) Study of system of harness mounting, first or leading hook in jacquard, tie up.
9) Card cutting and card lacing.
10) Study of 2 x 1 drop box motion on silk loom

REFERENCE BOOKS

1. Weaving mechanism, Volume-I by Prof. N.N.Banerjee
2. Plain weaving motion by Prof K.T.Aswani
3. The mechanism of weaving by Thomas W Fox
4. Fancy weaving mechanism by Prof. K.T.Aswani
5. Hand book of weaving by sabit Adanu
6. Weaving machine, mechanism, and managements by Dr. M.K. Talukdar.

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : FIFTH
SUBJECT TITLE : COMPOUND WOVEN STRUCTURE-II
SUBJECT CODE : CTT 142504

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	03	06	03	80	20	50	50	200

RATIONALE

Compound Woven Structures II course aims at providing in depth understanding of compound woven structures. It is aimed at making students thorough with the concepts of compound structures like Terry Pile Structures, Terry ornamentation, Pile produced with the aid of wires, face to face weaving, weft pile structures their functional requirements for certain end use application, their usage in industry.

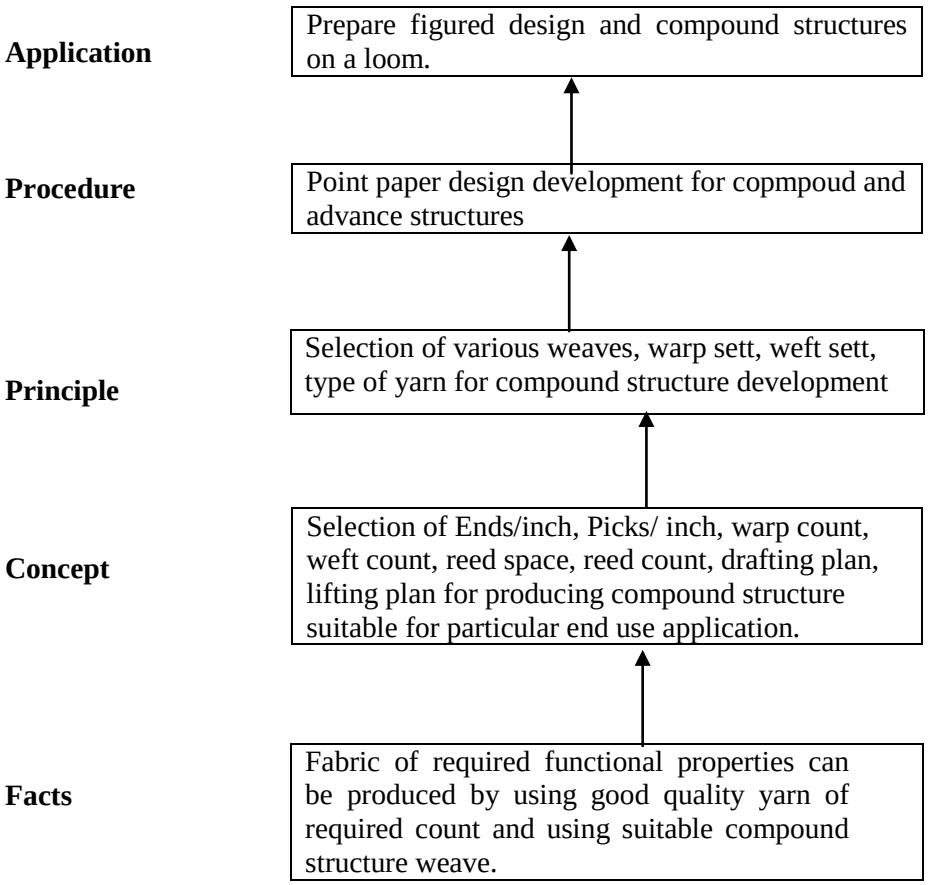
In this subject students are taught about designing of compound structures and their production on the loom. They are also taught the methods of ornamenting the fabric with attractive figures during weaving process. Elaborate and intricate woven structures are extensively used in various areas like ladies dress materials, furnishing fabric, upholstery. Students are taught weaving and designing of various unconventional structures like Lappet and swivel. Students are also taught complex structures like Leno, methods of weaving Leno, Madras Muslin. This course also encompasses details of carpet manufacturing.

General Objectives:

Students will be able to

1. Understand the construction and weaving of complex structures like Damask & Brocades, type of jacquard required to weave these structures & the details of the working of the Jacquard.
2. Understand the concept of olden day Tapestry structures, modern tapestry structures, how is woven, details of the loom required for weaving & construction particulars of the same.
3. Understand the concept of Leno weaving, different methods of Leno weaving, different leno structures & how it is woven on loom. They will be able to understand how a complex structure of Madras Muslin is designed and woven using a fine pitch jacquard.
4. Understand how terry structures are produced, terry ornamentation, how Stripe and Checks terry designs are produced, construction particulars of these structures.
5. Understand warp pile is produced with the aid of wires, how fast piles structures are produced.
6. Understand the concept of face to face weaving, designing of Moquette & Velvet structures, different systems to produce these structures on loom.
7. Understand the concept of weft pile structure (Velveteen), Classification of velveteen, how these structures are produced, density of pile, construction particulars of the same.
8. Understand the concept of carpet weaving.
9. Understand the concept of unconventional structures like Lappet and Swivel.

Compound Woven Structures II- Learning Structure:



Compound Woven Structures –II - Theory:

SECTION I			
Topic No.	**Topic**	**Hrs**	**Marks**
1	Damask- *1.1. Introduction to Damask structures.* *1.2. Reversible and non- reversible Damask.* *1.3 Types of jacquards used for producing damask.* *1.7 1.4 Details study of self-twilling jacquard.* Brocade *1.8 1.5 Figured warp rib brocade.* ***1.9*** *1.6 Constructional details of figured warp rib brocade.*	06	10
2	**Tapestry Structures -** 2.1 Olden day tapestry. 2.2 Simple weft faced tapestry. 2.3 Two weft tapestry structure. 2.4 Three weft and four weft tapestry.	04	08
3	**Jacquard Designing:** 3.1 Principle of operation of Jacquard 3.11 Single lift single cylinder Jacquard. 3.12 Center shed Jacquard. 3.13 Double lift single cylinder Jacquard 3.14 Double lift double cylinder jacquard, 3.2 Harness and design calculations 3.3 Casting out operation in Jacquard designing, its importance. 3.4 Count of point paper. 3.5 Different types of ties used in jacquard designing. 3.51 Ordinary Harness ties 3.511 London, Crossed or Quarter-twist tie. 3.512 Norwich or Straight tie. 3.52 Special Harness ties 3.521 Centre or Point tie 3.522 Mixed tie. 3.523 Ties for bordered fabrics. 3.6 Construction of squared paper design. 3.61 Process of drafting a sketch design. 3.62 Drafting designs from woven fabric. 3.621 Geometric figures. 3.622 Natural or abstract figures. 3.63 Development of figures. 3.64 Figure shedding insertion of ground weave. 3.65 Conditions to observe in designing figured fabrics. 3.66 Design unit and design repeat, Geometric fig,symmetrical figs. 3.7 Arrangement of figures 3.71 Different drop devices used in designing. 3.72 Different bases used - diamond, ogee, diagonal waved line base, rectangular base, Application of half drop principle to above mentioned bases. 3.73 System of drafting half drop and drop reverse designs. 3.74 Sateen system of distribution, Merit and demerits of sateen base.	14	22
	TOTAL	24	40

SECTION-II			
Topic No.	**Topic**	**Hours**	**Marks**
5	**Terry Pile Structures** – 5.1 Concept of formation of the warp pile. 5.2 Standard weaves for producing pile weave on 3 picks, 4 picks, 5 picks, 6 picks. 5.3 Special mechanism required for terry weaving. 5.4 Construction Particulars of a good quality Terry fabric. 5.5 Terry ornamentation - Strips and check pattern. Figured terry fabrics.	6	8
6	**Warp pile fabrics produced with the aid of wire**. 6.1 Introduction. 6.2 All over and continuous pile structure. 6.3 Fast pile anchorage.	2	6
7	**Warp pile fabrics produced on the face to principle.(Velvets)** 7.1 Principle of face to face weaving. 7.2 Special mechanisms required for face to face weaving. 7.3 Continuous pile structure. 7.4 Velvet structures – 'U' Pile structure on single shuttle system & double shuttle system, different drafts and denting orders used for 'U' pile , corresponding peg-plans & cross sections. 7.5 Fast pile structures - 'W' Pile structure on single shuttle system & double shuttle system, different drafts and denting orders used for 'W' pile , corresponding peg-plans & cross sections. 7.6 Moquette Structures – design, draft, peg-plan & cross section 7.7 Construction particulars of Velvet & Moquette 7.8 Difference between Velvets & Moquettes	6	6
8	**Weft pile fabrics (Velvettens)** – 8.1 Classification of velveteen. 8.2 All over or plain velveteen. 8.3 Plain back velveteen- Design, draft peg-plan, cross section before cutting and after cutting. 8.4 Length of pile. 8.5 Density of pile - Changing the density of pile, Expression for density of pile 8.6 Fast pile structure 8.7 Twill- back velveteen. 8.9 Weft plushes. 8.10 Corded velveteen (Corduroys)	6	10
9	**Lappet and Swivel weaving** 9.1 Introduction to Lappet weaving 9.2 Introduction to Swivel weaving.	2	6
10	**An introduction to computer aided Textile designing- 06 hr, 08 M** Exposure to dobby and jacquard designing softwares	2	4
	TOTAL	24	40

Compound Woven Structures II - Practical:

The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B

Group A: List of Experiments: Compound Woven Structures - II

Sr. No.	List of Experiments
1	Analysis of Damask sample.
2	Analysis of Tapestry sample.
3	Construction of Jacquard designing motif by using various bases.
4	Drafting of sketch design on point paper.
5	Drafting of sketch design on point paper.
6	Drafting of sketch design on point paper.
7	Analysis of Terry towel sample.
8	Analysis of Terry towel (Stripe) sample.
9	Analysis of Terry towel (Checks) sample.
10	Analysis of Velvet – U pile sample.
11	Analysis of Velvet – W pile sample.
12	Analysis of corded velveteen (Corduroy)
13	Analysis of Lappet structures

Group B: Solutions to the Assignments given in class.

Assignment Number	Topic
1	Draw design, draft & peg plan of Damask figuring assuming your own motif.
2	Explain the working of Self twilling Jacquard with the help of neat diagrams.
3	Draw design, draft & peg plan of Brocade figuring assuming your own motif.
4	How tapestry structures were developed in olden days.
5	Draw a design and cross section of a two weft tapestry structure. Give constructional details of the same.
6	Draw a design and cross section of a four weft tapestry structure. Give constructional details of the same.
7	Describe the principle of operation of following jacquards. a) Single lift single cylinder Jacquard b) Center shed Jacquard c) Double lift single cylinder Jacquard d) Double lift double cylinder jacquard.
8	Elaborate the concept of casting out with the help of an example.
9	Elaborate the concept of count of design paper with the help of an example.
10	Draw diagrams of following ties. a) London, Crossed or Quarter-twist tie b) Norwich or Straight tie c) Centre or Point tie d) Mixed tie e) Ties for bordered fabrics.
11	Explain the process of drafting a sketch design.
12	Explain the process of drafting a geometric design.
13	List down various conditions to be observed in designing figured fabrics.
14	Describe various drop devices being used in jacquard designing. List down various bases used while sketching a jacquard design. Explain how these bases are applied for arranging figures with the help of diagrams.
15	Explain the process of drafting half drop and drop reverse design

16	Explain the advantages & disadvantages of Sateen system of distribution. Explain with help of a diagram how motifs are arranged on 5 end sateen, 8 end sateen & 10 end sateen base.
17	With the help of a neat diagram explain how warp pile is formed on the surface of a fabric.
18	Draw design, draft, peg-plan & cross section of a 3 pick, 4 pick , 5 pick and 6 pick terry. Give construction particulars of a good quality all cotton terry fabric.
19	Explain in details various mechanisms required for terry weaving.
20	Write a short note on terry ornamentation. Draw design, draft and peg plan of check design in terry fabric.
21	Draw design, draft and peg plan of a combined stripe and check design in terry fabric.
22	With the help of a neat diagram explain how warp pile is produced with the aid of wires.
23	Draw at least 2 designs and corresponding cross sections of continuous pile produced with the aid of wires.
24	Draw a design and cross section for a fast pile produced with the aid of wires.
25	With the aid of a schematic diagram explain how a pile can be produced with the aid of wires.
26	Explain the principle of face to face weaving.
27	Draw design, draft, peg plan and cross section for a 'U' pile produced on face to face weaving principl with single set of pile warp. Draw different designs changing the drafts. Draw designs for single shuttle and double shuttle systems.
28	Draw a design, draft, peg plan & cross section for a 'U' pile produced on face to face weaving principle with two sets of pile warps.
29	Draw design, draft, peg plan and cross section for a 'W' pile produced on face to face weaving principl with single set of pile warp. Draw different designs changing the drafts. Draw designs for single shuttle and double shuttle systems.
30	Draw a design, draft, peg plan & cross section for a 'W' pile produced on face to face weaving principle with two sets of pile warps.
31	What are Moquette structures? Draw design, draft, peg plan & cross section for a Moquette structure.
32	Compare Vetvet with Moquette.
33	Give construction particulars of Velvets & Moquette.
34	Give classification of velveteens.
35	Give a brief account for different types of yarns used for producing velveteen. Give end uses of the same.
36	Draw a detail weave corresponding to following pile base weaves. i) Plain weave ii) 1/2 twill weave iii) 1/3 twill weave iv) Satinnettte v) 5 end sateen. Draw cross section before and after cutting operation.
37	State expression for density of pile of velveteen structures.
38	Explain various ways of changing density of pile.
39	Explain with the help of a neat diagram how fast pile structures can be produced in plain back velveteen. Draw cross section of the same.
40	Draw designs of twill back velveteen.
41	Give construction particulars of good quality velveteen.
42	What are weft plushes? What are the characteristics of the same? Draw design of it.
43	Draw design and cross section of corded velveteen (Corduroys).
44	Explain the characteristics of Lappet structures.
45	Explain with the help of a neat diagram the working of a Lappet Loom.
46	Explain the characteristics of Swivel structures.
47	Explain with the help of a neat diagram the working of a Swivel Loom.
48	Compare Extra warp figuring with Lappet figuring
49	Compare Extra weft figuring with Swivel structures.

Note: For Assignment

1. **Assignments should be solved in separate A-4 size journal.**
2. **Assignments will be assessed progressively.**

References:

Sr No.	Name of Book	Author	Publication
1	Watson's Advance Textile Design (Compound Woven Structures)	Z. Grosicki	Butterworth & Co (Publisher) Ltd., London : 88, Kingsway, WC2B6AB
2	Woven Cloth Construction	A.T.C. Robinson	The Textile Institute, 10 Blackfriars street, Manchester : M35DR
3	Textile Designs	Nisbet	West Duxbury Manchester

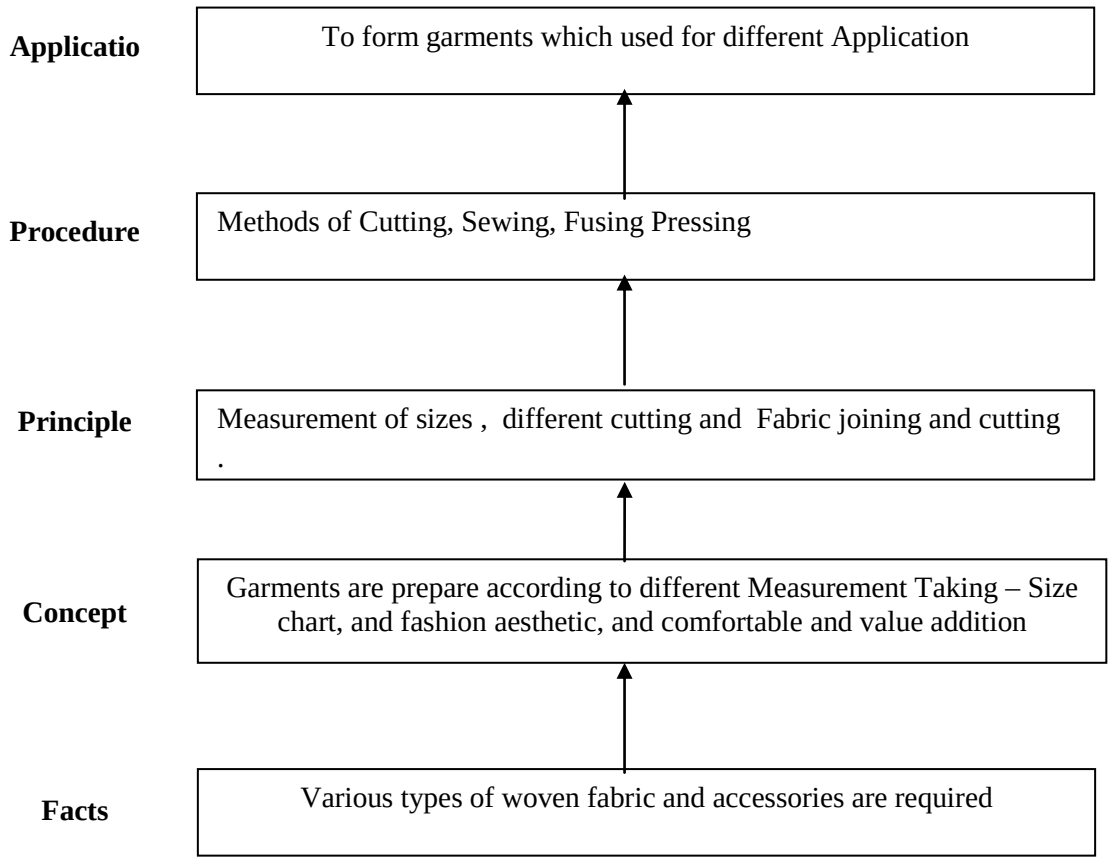
COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : FIFTH
SUBJECT TITLE : GARMENT MANUFACTURING
SUBJECT CODE : DTC 144506

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	-	03	03	80	20	-	-	100

RATIONALE

The latest trend in textiles is high demand for fashion oriented, value added readymade garments both locally and globally. The subject deals with how garments are made fashion oriented, aesthetic, and comfortable and value-addition.
To introduce different techniques of joining fabrics.
To introduce different techniques of cutting different parts of garments.
To introduce to the students different types of preparing garments.

Learning Structure: GARMENT MANUFACTURING



GARMENT MANUFACTURING THEORY

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Introduction to Garment Manufacturing Industry in India:** Size and nature of industry, Domestic and Export industry	02	02
2	**Marker planning and Spreading** 2.1 Types of fabrics – One wary , Two way 2.2 Marker planning, Methods of marker planning, Marker efficiency 2.3 Marker duplication 2.4 Requirements of spreading, methods of spreading	06	12
3	**Cutting:** 3.1 Requirements of cutting 3.2 Methods of cutting – Straight knife, round knife, band knife, notches, drills, die cutting, computerized cutting 3.3 common defects in cutting and their remedies	03	06
4	**Sewing:** 4.1 Seam – definition, types – Superimposed, lapped, bound, flat, decorative, edge neatening, class 7 and 8 4.2 Stitch – definition, intralooping, interlooping, interlacing, types – lock stitch, chain stitch, hand stitch, 4.3 sewing machine feed mechanism – dog, differential, unision, compound and puller feed mechanism. 4.4 Sewing machine needle – different parts, function of parts 4.5 Sewing thread – fiber types, effect of thread properties on seam performance 4.6 Sewing Problems – stitch formation, pucker, and damage of fabric along the stitching line. 4.7 Buttonhole, button sew, bar tack, label sewer machines	10	16
5	**Components and Trims:** 5.1 labels and motifs, linings, interlinings, lace, braid, elastic, buttons, zips	03	04
		24	40

SECTION-II			
Topic No.	**Topic No.**	**Hours**	**Marks**
1	**Fusing** 6.1 Advantages of using fusible interlining 6.2 Requirements of fusing 6.3 Methods of applying resins to base cloth 6.4 Means of fusing – temperature, pressure and time 6.5 Fusing equipments 6.6 Methods of fusing – reverse, sandwich and double fusing 6.7 Introduction to welding and moulding	04	06
2	**Pressing** 7.1 Purpose of pressing **Garment costing**	02	04

3	**Quality:** 1.1 Definition 1.2 Terminology: Quality Management, Quality plan, Quality Control, Inspection, Testing 1.3 Factors influencing consumers' perception of quality	02	04
4	**Inspection:** 2.1 Types of Inspection 2.2 Inspection loop 2.3 Fabric Inspection: 4-point, 10-point and Graniteville '78' System 2.4 Quality check for Sewing thread 2.5 Quality check for Zippers 2.6 Quality check for Buttons and Interlinings	06	12
5	**Introduction to Modern tool of Quality Management** 5.1 Introduction to TQM – Basic Principal and its application 5.2 Introduction to Lean Manufacturing – Basic Principal and its application 5.3 Introduction to Six-Sigma – Basic Principal and its application	02	04
6	Basic Pattern Making: Measurement Taking – Size chart and Measuring of Sizes. Definition of various garments parts & positions. Methods: Bespoke method & Industrial method (Using Blocks) – Basic block construction – Block preparation & correction. Figure analysis: Body ideals, body proportion, height, weight distribution, body parts, individual figure analysis, study of body measurement of all age groups. Preparation of basic blocks, muslin pattern, commercial pattern, sizes and its understanding, fabric preparation for garment construction.Care labeling of apparel	08	10
	TOTAL	24	40

ASSIGNMENTS

- Students should complete assignments given by the faculty on the above topics from time to time.
- Students have to write it in A4 size notebook
- Continuous assessment of assignments will be done.
- **Assignment marks** Assignments will be evaluated on regular basis and will be averaged with the Sessional marks

REFERENCES

1) Garment Technology for fashion designers by Gerry Cooklin
2) Introduction to clothing Manufacturing by Gerry Cooklin
3) Clothing construction and wardrobe planning by Dora S. Lewin, Mabel Goode Bowers, Manetta Knttunen — The Macmillan co New York
4) Garment Technology by Dr. V.Subramaniam — Winter School booklets 1990
5) BIS publications 1989.

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : FIFTH
SUBJECT TITLE : SEMINAR & IN-PLANT TRAINING REPORT
SUBJECT CODE : ATT 143506

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme				Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	OR	TOTAL
--	03	03	--	--	--	--	50	50	100

Topic -
In the beginning of the semester, every student individually will be assigned a seminar topic in the emerging / perspective field in the area of textiles such as Spinning, Weaving, Fibres, Testing, and chemical processing and alike.

Seminar Preparation and Presentation -
Students will collect the information on the above subjects and submit the report both soft and hard copy on the dates specified by the concerned faculty. The seminar report will be of minimum 25 pages. The spacing between the lines will be 1.5. The font size will be 12 point with Times New Times Roman. The list of reference must be given at the end of seminar report. The list of reference should be written as per the Textile Research Journal format.

Term Work Marks –
Seminar Report - 25 Marks
Presentation - 25 Marks

INPLANT TRAINING

Objective:
To provide an opportunity to observe industrial activities and gather related technical and non-technical information about industry working.

Training Period:
Six weeks after completion of second year during the summer vacation.

Industry:
Spinning, Weaving, Garment, Processing, Synthetics fibre/ fabric manufacturing, Textile Chemicals & Auxiliaries, laboratories/ R&D, Machinery Manufacturing, Marketing etc. (Any One).

Observations:
Observe working of industry and collect data as per guidelines in the manual, study machineries / systems / practices.

Training Report:

* Report should have Title on Cover of Report as per Format.
* Report should be prepared as per following sequence -

Page No.	Content
1.	Certificate from Institute as per Format.
2.	Acknowledgement
3.	Programme of Training
4.	Introduction of Industry
5.	Index with Page Numbers
6.	Plant/Dept. Layout
7.	Organization Structure.
8. (Onwards)	Department wise / Product wise Report.

Report should be based on Own Observations made, data collected during Inplant Training (i.e. Study of Machinery, Actual Production and Efficiency, Production Control, Modern Developments in Machines/Process, Flow Chart of Processes, Speed of Important Parts, Labour Allocation, Maintenance Practices, Process Control & Quality Control Activities etc.) roles and responsibilities of various Workers/Technical Staff.

Special Study: Mini Project Undertaken, Costing, Production Planning & Control, Target Achievement, Information regarding humidification plant, Utility, Electrical Supply, Store, Purchase, Marketing, Sales, Samples, Lay-out of Mill etc.

Assessment:

Viva-voce to be conducted in fifth semester of Final Year Diploma. Term Work Marks are assigned on the basis of student's performance in viva-voce, conducted by internal and external examiners from related field.

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COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : FIFTH
SUBJECT TITLE : INDUSTRIAL VISIT
SUBJECT CODE : ATN 143507

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
--	02*	--	--	--	--	--	--	--

Objective:
To provide an opportunity to observe industrial activities and gather related technical and non-technical information about industry working.

Frequency
Minimum Three visits.

Industry:
Spinning, Weaving, Garment, Processing, Synthetics, Textile Chemicals & Auxiliaries, R&D, Machinery Manufacturing, Marketing etc. (Any One).

Observations:
Observe working of industry and collect data as per guidelines in the manual, study machineries / systems / practices.

Report:
* Report should have Title on Cover of Report as per Format.
* Report should be prepared as per following sequence -

Page No.	Content
1.	Introduction of Industry
2.	Plant/Dept. Layout
3.	Organization Structure.
4. (Onwards)	Department wise / Product wise Report.

Report should be based on own Observations made, data collected during visit (i.e. Study of Machinery, Actual Production and Efficiency, Production Control, Modern Developments in Machines/Process, Flow Chart of Processes, Speed of Important Parts, Labour Allocation, Maintenance Practices, Process Control & Quality Control Activities etc.) roles and responsibilities of various Workers/Technical Staff.

Assessment:
As it is non-creadit subject, gradeis assigned on the basis of student's performance in viva-voce, conducted by internal and external examiners from related field.

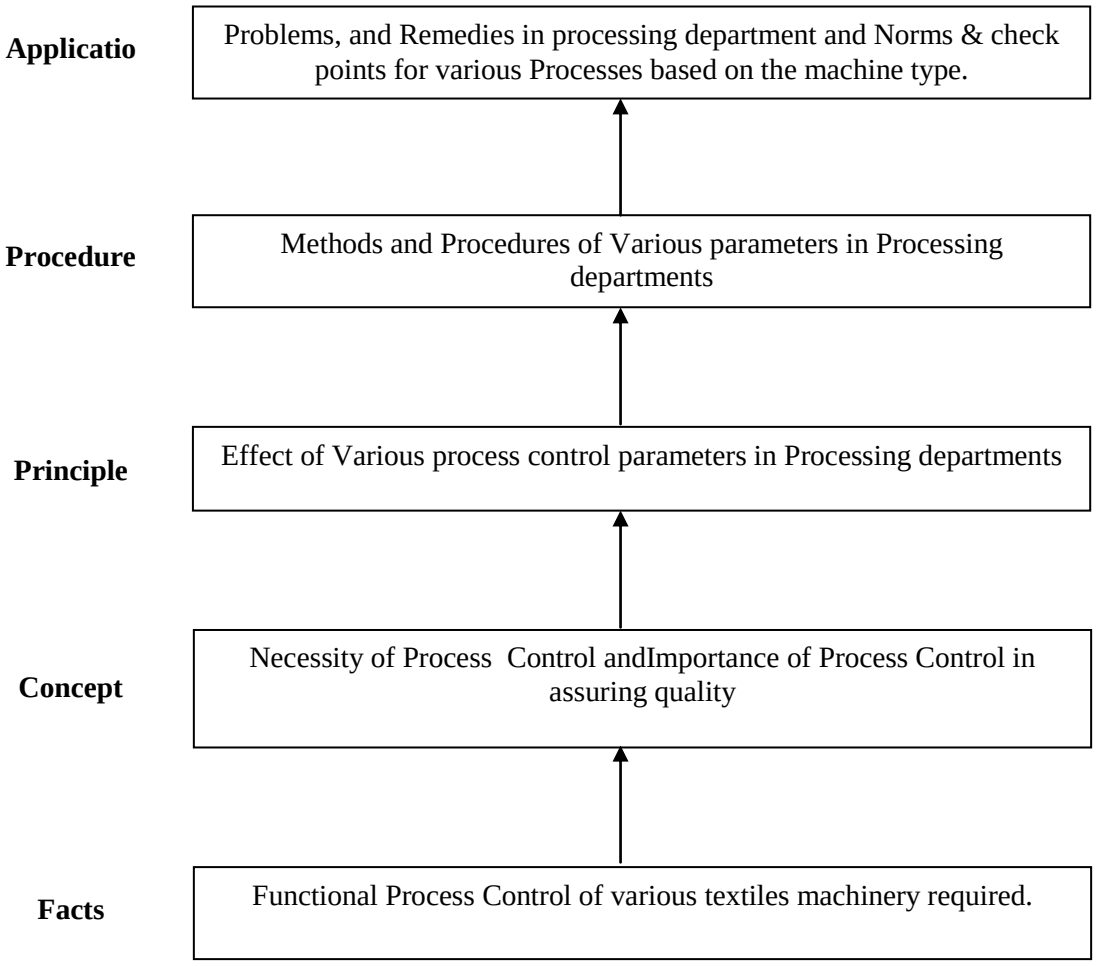
COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/TEXTILE CHEMISTRY/DIPLOMA IN KNITTING TECHNOLOGY
COURSE CODE : DMTT/DMTC/DKT
SEMESTER : FIFTH
SUBJECT TITLE : PROCESS CONTROL IN TEXTILE PROCESSING
SUBJECT CODE : DTC 144508

Teaching Scheme				Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	OR	TOTAL
--	03	03	--	--	--	--	50	50	100

RATIONALE

To update the student about the present need of the industry, society and the various Process Control techniques which will result in good quality textile products. This will also help the students to understand the various quality parameter checks which are required to be evaluated at the end of the process.

Learning Structure: Process Control in Textile Processing



Process Control in Textile Processing

SECTION – I

	Name of Unit	Lectures	Assignment Marks
1	Introduction to Process Control ✓ Definition of Process Control ✓ Necessity of Process Control ✓ Importance of Process Control in assuring quality ✓ Structure and functions of Quality Assurance Department	**08**	**10**
2	Process Control in Pre-Treatments ✓ Process Control Parameters in Singeing ✓ Process Control Parameters in Desizing ✓ Process Control Parameters in Scouring ✓ Process Control Parameters in Mercerizing ✓ Process Control Parameters in Bleaching ✓ Process Control Parameters on Continuous Pre-treatment machines ✓ Problems, and Remedies in Pre-treatments ✓ Norms and check points for above parameters.	**10**	**10**
3	Process Control in Dyeing ✓ Process Control Parameters on Jiggers, winch, padding mangles ✓ Process Control Parameters on Jet dyeing machines, beam dyeing machines, soft flow dyeing machines ✓ Process Control Parameters on Continuous Dyeing Range ✓ Laboratory to Bulk Co-relation and recipe formulation. ✓ Measures to achieve Right First Time dyeing. ✓ Problems, and Remedies in Dyeing ✓ Norms and check points for above parameters.	**10**	**10**
4	Process Control in Printing ✓ Process Control Parameters on Flat Bed Printing Machines ✓ Process Control Parameters on Rotary Printing Machines ✓ Process Control Parameters on Agers, Curing machine, Washing range. ✓ Laboratory to Bulk Co-relation and recipe formulation. ✓ Problems, and Remedies in Printing ✓ Norms and check points for above parameters.	**10**	**10**
5	Process Control in Finishing ✓ Process Control Parameters on Stenter Machines ✓ Process Control Parameters on Padding mangles ✓ Process Control Parameters on Curing machine, Vertical Dryers, Sanforizing, Decatizing, Schriener calendering. ✓ Laboratory to Bulk Co-relation and recipe formulation. ✓ Problems, and Remedies in Finishing ✓ Norms and check points for above parameters.	**10**	**10**

ASSIGNMENTS

- Students should complete assignments given by the faculty on the above topics from time to time.
- Students have to write it in A4 size notebook
- Continuous assessment of assignments will be done.
- **Assignment marks** Assignments will be evaluated on basis of Assignment submission and the orals.

REFERENCE BOOKS:

1. Testing and Quality Management – Volume I by Dr. V. K. Kothari, IAFL Publication, New Delhi.
2. Testing and Quality Management – Volume II by Dr. V. K. Kothari, IAFL Publication, New Delhi.
3. Norms for the Textile Industry – Part I by ATIRA, ATIRA, Ahmedabad
4. Norms for the Textile Industry – Part II by ATIRA, ATIRA, Ahmedabad
5. Norms for the Textile Industry – Part III by ATIRA, ATIRA, Ahmedabad
6. Norms in the Textile Industry by ATIRA, ATIRA, Ahmedabad
7. Norms in the Textile Industry by BTRA, BTRA, Mumbai
8. Norms in the Textile Industry by SITRA, SITRA, Coimbatore
9. Norms in the Textile Industry by NTIRA, NTIRA, Gaziabad
10. Industrial Quality by Lawrence S., St. LuciePress, Washington D.C.
11. Dye House Management Manual by James Park and John Shore, Multi Tech. Publishing Company, Mumbai – 400 077.

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/TEXTILE CHEMISTRY/DIPLOMA IN KNITTING TECHNOLOGY
COURSE CODE : DMTT/DMTC/DKT
SEMESTER : FIFTH
SUBJECT TITLE : MAN-MADE FIBRE MANUFACTURING
SUBJECT CODE : DTC 144509

Teaching Scheme				Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	OR	TOTAL
--	03	03	--	--	--	--	50	50	100

RATIONALE

This subject covers Polymer their classification, raw material used for man-made fibre production, properties and their applications, Spin finishes, and application oriented properties of some High performance fibres.

SECTION – I

	Name of Unit	Lectures	Assignment Marks
1	1 Classification & synthesis of various polymers polymerization Types & reactions, chain growth, step growth, condensation, addition, free radical, anionic, cationic Polymerization	**04**	**06**
2	Raw Material in Manmade Fibre production. Commercial routes to produce Man-made Fibre raw , materials e.g. Hexamethylene diamine, caprolactum, TPA, MEG, CAN	**04**	**06**
3	Synthetic fibre- Production techniques Detail discussion Techniques – melt, dry and wet spinning techniques of manufacturing of man made fibres.	**06**	**06**
4	**Synthetic fibre- Production** I) Polyamide: Nylon 6 & Nylon 66 fibres: Production (Melt spinning), Production flow chart, Physical & chemical properties, And applications. II) Polyester (Polyethylene Terepthalate) fibre: Production (DMT & TPA Route), Production flow chart , Physical & chemical properties, applications. III) Polypropylene fibre: Production (Suspension), Physical & chemical properties, applications. IV) Polyacrylonitrile Fibre: Acrylic fibres: Production (Dry spinning Method), Production flow chart , Physical & chemical properties, applications. Modacrylic fibre: Physical & chemical properties, Applications	**10**	**06**

SECTION – II

	Name of Unit	Lectures	Assignment Marks
1	Regenerated fibres Viscose rayon: Raw Material, Production (Wet spinning Method), Physical & chemical properties,applications, ii) Introduction to Acetate & Triacetate fibres, Lyocell fibres.	**05**	**06**
2	Spin finish in Man-made fibre Production Chemical constitution, Desirable properties, Functions, Method of Application of Spin finishes. Spin finishes .	**05**	**06**
3	Properties and application of high performance fibre , Carbon fibre, Glass fibre Poly Tetra Fluro Ethylene application of High (PTFE), Sulphur Fibre, Poly Methyl Mehta Performance fibres Acrylate(PMMA) , Polybenzimidazole fibre,	**04**	**06**
4	Tow to top conversion, Tow to sliver – Stretch Breaking ,Terbo Staple Machine,Heavy Acrelic tow,Cutting Methods,Tow to yarn spinning	**10**	**08**

ASSIGNMENTS

- Students should complete assignments given by the faculty on the above topics from time to time.
- Students have to write it in A4 size notebook
- Continuous assessment of assignments will be done.
- **Assignment marks** Assignments will be evaluated on basis of Assignment submission and the orals.

Text Books:

1. Manufactured fibre technology– V. B. Gupta and V. K. Kothari, Chapman & Hall Publications, 1997.
2. Production of Synthetic Fibres by A. A. Vaidya, PHI Pub 2003
3. Textile Yarns by B. C. Goswami, J. G. Martindale & Seardino.
4. Man-made Fibres and their Processing-Volume 6, by Werner Klein, Published by The Textile Institute, First edition 1994.
5. Polyamides, Polyesters, Polyolefins and Acrylics, Woodhead Publishing Ltd.

Reference Books:

1. A Text Book of Man-made Fibre Science & Technology– Mishra S.P., New Age International Publishers
2. Texturing Technology, Woodhead Publishing Ltd.
3. Guide to texturising and crimping – by R.S.Gandhi

COURSE : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/ TEXTILE CHEMISTRY/DIPLOMA IN KNITTING TECHNOLOGY
SEMESTER : FIFTH
SUBJECT TITLE : KNIT PRODUCT DEVELOPMENT
SUBJECT CODE : DTC 144510

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	Paper HRS	TH	Test	Practical	OR	TW	TOTAL
--	03	03	--	--	--	--	50	50	100

RATIONALE:

Rationale:-

To develop skill to identify product
To develop skill to identify material required for product
To develop skill to identify machinery required to produce product
To develop skill to identify testing required for the product
To develop innovation in the current product

Assignments:

a. Students will be given Two Products to Identify
   a) Product and its end use
   b) Identify material
   c) Identify machinery required to produce product
   d) Identify tests and testing procedures to be carried out according to the standards
   e) Identify costing of the product
   f) Identify market and endues of the product
   g) The will suggest alternatives for the material

2. Student will be given concept to develop innovative Product.

COURSE : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/ TEXTILE CHEMISTRY/DIPLOMA IN KNITTING TECHNOLOGY
COURSE CODE : DMTT/DMTC/DKT
SEMESTER : FIFTH
SUBJECT TITLE : **ENTREPRENEURSHIP DEVELOPMENT**
SUBJECT CODE : DTC 144511

Teaching Scheme				Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	OR	TOTAL
--	03	03	--	--	--	--	50	50	100

RATIONALE

To study the nature, characteristics, types of entrepreneurs.
To learn theories of entrepreneurship.
To study qualities of successful entrepreneurship.
To discuss problems faced by entrepreneurs.
To learn project management and management of business and policies of government for entrepreneurship.

SECTION – I

	Name of Unit	Lectures	Assignment Marks
1	Definition of Entrepreneur, Manager, Executives, Importance of entrepreneur, Entrepreneurial behavior Attribute and skills, Concepts of entrepreneur, Classification and types of entrepreneur. Barriers to Entrepreneurship, socio- economic origin of entrepreneur	**06**	**10**
2	Functions of Entrepreneur Traits And motivation, qualities of successful entrepreneurs.	**04**	**10**
3	Theories of Entrepreneurship, Entrepreneur Model, Entrepreneur personality Task, self development, self evaluation.	**04**	**10**
4	Entrepreneurial motivation Entrepreneur Ambitions, Entrepreneur facilitating factors, compelling factors. Project Management steps involved in project preparation/formulation. Feasibility report location layout. Types of plant layout.	**10**	**20**

SECTION – II

	Name of Unit	Lectures	Assignment Marks
1	Elements of cost, FC, VC, TC, AFC, AVC, AC,MC, Methods of costing, pricing. Break even point its uses.	**06**	**10**
2	Investment decisions, methods of evaluating capital projects. Payback period, ARR/discounted cash flow.	**06**	**10**
3	Finance, sources of finance, depreciation, methods of calculating depreciation. Term lending Institution, small scale Industries, role and importance, problems faced by SSI. Measures taken to important rove SSI.	**10**	**20**
4	Starting SSI, formalities procedures, Govt. policies, incentives, types of ownership. Importance of textile industry in Indian Economy – problems and prospects of textile industry. National textile policy.	**04**	**10**

Practicals :-

(1) Related Experience :- • Visit to small scale industry.
• Visit Agencies that finance SSI.

(2) Project: - Survey of local market to know needs of consumer –
• Formation of project proposal.
• Report on visits.

(3) Artical :- Preparation of Articles based on followingDyeing printing, embriodary, Garment manufacturing, soaps, detergents, stain removers. Minimum 5 articles from the above are to be prepared and organise exhibition-cum-sale of the prepared products.

REFERENCES

1. Dynamics of Ent. Development & Management - Mr.Vasant Desai.
2. Management of Small Scale Industries - Mr.Vasant Desai.
3. Ent. Development - Mr.Gupta & Mr.Srinivasan.
4. Financial Management - Mr.S.C.Kuchal.

SASMIRA'S INSTITUTE OF MAN-MADE TEXTIES
TEACHING AND EXAMINATION SCHEME
DIPLOMA PROGRAMME MAN-MADE TEXTILE TECHNOLOGY (DMTT)
Implemented from 2014-2015
SEMESTER - VI

(Duration : 16 weeks)

CODE	COURSE & TITLE	C/O	PRE-REQUISITE	TEACHING SCHEME			EXAM SCHEME					TOTAL
				L/T	PR	CR	TEST	TW	TH	PR	OR	
MTC 145601	Merchandizing Management	C	Nil	3	-	3	20	-	80	-	-	**100**
ATC 143602	Textile Mill Planning	C	Nil	3	-	3	20	-	80	-	-	**100**
CTT 142603	Yarn Manufacturing Technology-IV	C	CTT 142502	3	3	6	20	50	80	50	-	**200**
CTT 142604	Fabric Manufacturing Technology-IV	C	CTT 142503	3	3	6	20	50	80	50	-	**200**
CTT 142605	knitting Technology	C	Nil	3	3	6	20	50	80	50		**200**
ATT 143606	Project	C	Nil	-	3	3	-	50	-	-	50	**100**
ATN 143607	Industrial Visit	C	Nil	-	2*	-	-	-	-	-	-	-
DTC 144608 - 11 144608-10	Elective subjects	O	Nil	-	3	3	-	50		-	50	**100**
TOTAL				**15**	**15**	**30**	**100**	**250**	**400**	**150**	**100**	**1000**

Elective Subject (Any One)

CODE	COURSE & TITLE	C / O	PRE-REQUISITE	TEACHING SCHEME			EXAM.SCHEME (Marks)					TOTAL
				L/T	P	CR	Progressive		Final Exam.			
							TEST	TW	TH	PR	OR	
DTC144608	Computer Color Measurement	O	Nil	-	3	3	-	50	-	-	50	100
DTC144609	Narrow Fabric Mfg. Technology	O	Nil	-	3	3	-	50	-	-	50	100
DTC 144610	Production Planning And Control	C	Nil	-	3	3		50	-	-	50	**100**
DTC 144611	Electronics in Textiles	C	Nil	-	3	3		50	-	-	50	**100**

***Non Credit Subject**

Course Details

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/ TEXTILE CHEMISTRY / DIPLOMA IN KNITTING TECHNOLOGY
COURSE CODE : DMTT/DMTC/DKT
SEMESTER : SIXTH
SUBJECT TITLE : MERCHANDISING MANAGEMENT
SUBJECT CODE : MTC 145601

Teaching Scheme				Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	OR	TOTAL
03	--	03	--	80	20	--	--	--	100

RATIONALE

The latest trend in textiles is high demand for fashion oriented, value added readymade garments exports. The subject deals with how fabrics/ garments are manufactured, processed and exported. Subject deals with the marketing, studying the fashion cycle, methods of sourcing, documentation for various types of export & import related to textiles.

	SECTION – I	Lectures	Marks
1	**Apparel Industry profile -** Introduction to apparel industry - organization of the apparel industry types of exporters Business concepts applied to the apparel industry - International trade. Buyer classification and buying network in exports- A basic profile of industry in far east, USA, Europe, Australia and ECE- Understanding of the quota system.	09	12
2	**Marketing -** Functional organization of an apparel firm. Responsibilities of a marketing division - marketing objectives and strategies - Marketing research - Types of markets: Retails and wholesale strategies for merchandise distribution- retailers - sourcing flows and practices. Marketing plan. Labeling and licensing.	11	12
3	**Fashion Merchandising -** Study of fashion principles, theories and fashion cycle and terminology- Introduction to fashion marketing and merchandizing principles – retail, whole sale, boutique, designer - wear, couture, pret-o-porter (ready to wear), haute couture (hi-fashion)-Study of domestic and international market – past, present and future scenario – evolution of fashion- Economic social, environmental and political influences on fashion	12	16

	SECTION – II	Lectures	Marks
4	**Sourcing -** Need for sourcing - sourcing materials - manufacturing resources planning - principles of MRP – Overseas sourcing - sourcing strategies. Supply chain and demand chain analysis - Materials management for quick response - JIT technology.	9	12
5	**Documentation -** Order confirmation, various types of export documents, Pre-shipment Post -shipment documentation, Terms of sale, payment, shipment etc.Export incentives: Duty drawback, DEPB, I / E license - exchange control regulation - foreign exchange regulation acts - export management risk - export finance. WTO / GATT / MFA - Functions and objectives, successes and failures	12	16
6	**Retailing:** Various types of retailers, Franchise retailing, garment retailing, private labels and others, department stores, specialty stores, chain retailers, mail order houses, shopping malls. Designer labels Vs Brands, Analysis of designer's labels. Licensing and franchising.	11	12

ASSIGNMENTS

- Students should complete assignments given by the faculty on the above topics from time to time.
- Students have to write it in A4 size notebook
- Continuous assessment of assignments will be done.
- **Assignment marks** Assignments will be evaluated on regular basis and will be averaged with the Sessional marks.

Reference Books

1. Sinha., - " Export Planning and Promotion ", - IIMS, Calcutta (1989).
2. Tuhin K. Nandi., - " Import - Export Finance ", - IIMS, Calcutta (1989).
3. Elaine Stone, Jean A. Samples., - "Fashion Merchandising ", McGraw Hill Book Company (1985) ISBN: 0 - 07 - 061742 - 2.
4. S. Shivaramu., - "Export Marketing - A practical guide to Exporters "Wheeler Publishing (1996) ISBN: 81-7544-166-6.
5. J.A. Jarnow, M. Guerreiro, B.Judelle. - "Inside the Fashion Business", Macmillan Publishing Company (1987) ISBN: 0-02-360000-4.

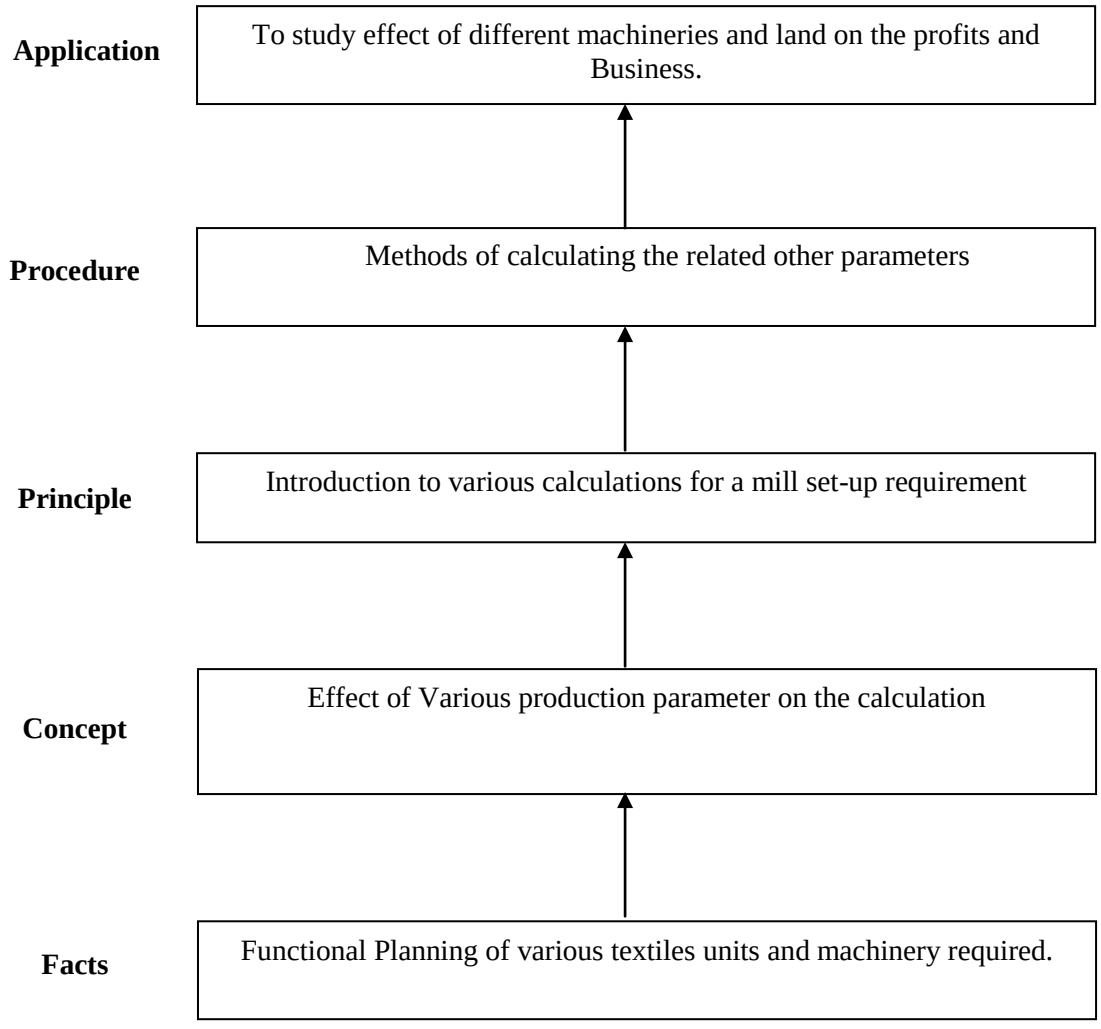
COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/TEXTILE CHEMISTRY / DIPLOMA IN KNITTING TECHNOLOGY
COURSE CODE : DMTT/DMTC/DKT
SEMESTER : SIXTH
SUBJECT TITLE : TEXTILE MILL PLANNING MANAGEMENT
SUBJECT CODE : ATC 143602

Teaching Scheme				Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	OR	TOTAL
03	--	03	--	80	20	--	--	--	100

RATIONALE

To know / learn the basic concepts of Industrial Engineering.
To learn productivity, work-study, work measurement.
To understand job evaluation and merit rating.
To import knowledge of Network Analysis, CPM & its application.
To know inventory control techniques, different types of control charts, operation research & tools of Operational Research.

Learning Structure: Textile Mill Planning Management



SECTION – I

	Name of Unit	Lectures	Marks
1	Sight selection Introduction to Industrial Engineering, its definition, productivity, Work study - Method study, work measurement, Technique used for method study and work measurement, job evaluation and merit rating	08	12
2	Network Analysis - Critical path method, comparison between PERT and CPM and its application (with 5 case studies in each category)	08	14
3	Inventory Control - Economic Order Quantity, ABC analysis, study of EOQ Model (with 5 case studies in each category)	08	14

SECTION – II

	Name of Unit	Lectures	Marks
1	Introduction to Statistical Quality Control (SQC) - Sampling method, Destructive and non-destructive testing (with 10 case studies in each category)	08	12
2	Introduction to different types of control chart - X, R, p, np and C chart, its advantages and limitation. (with 10 case studies in each category)	08	14
3	Introduction to Operation Research (O.R.) - Tools of O.R. , Formulation of LP problem, solving LP problem using graphical and simplex method, (with 10 case studies & 10 Assignment problem).	08	14

REFERENCES

1. Introduction to work study by ILO
2. Industrial Engg. by Dr. B. Kumar.
3. A text book of Industrial Engg. and Management system by Dr. S. Dalela and Mansoor Ali.

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : SIXTH
SUBJECT TITLE : YARN MANUFACTURING TECHNOLOGY IV
SUBJECT CODE : CTT 142603

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
3	3	6	3	80	20	50	50	200

Rationale :

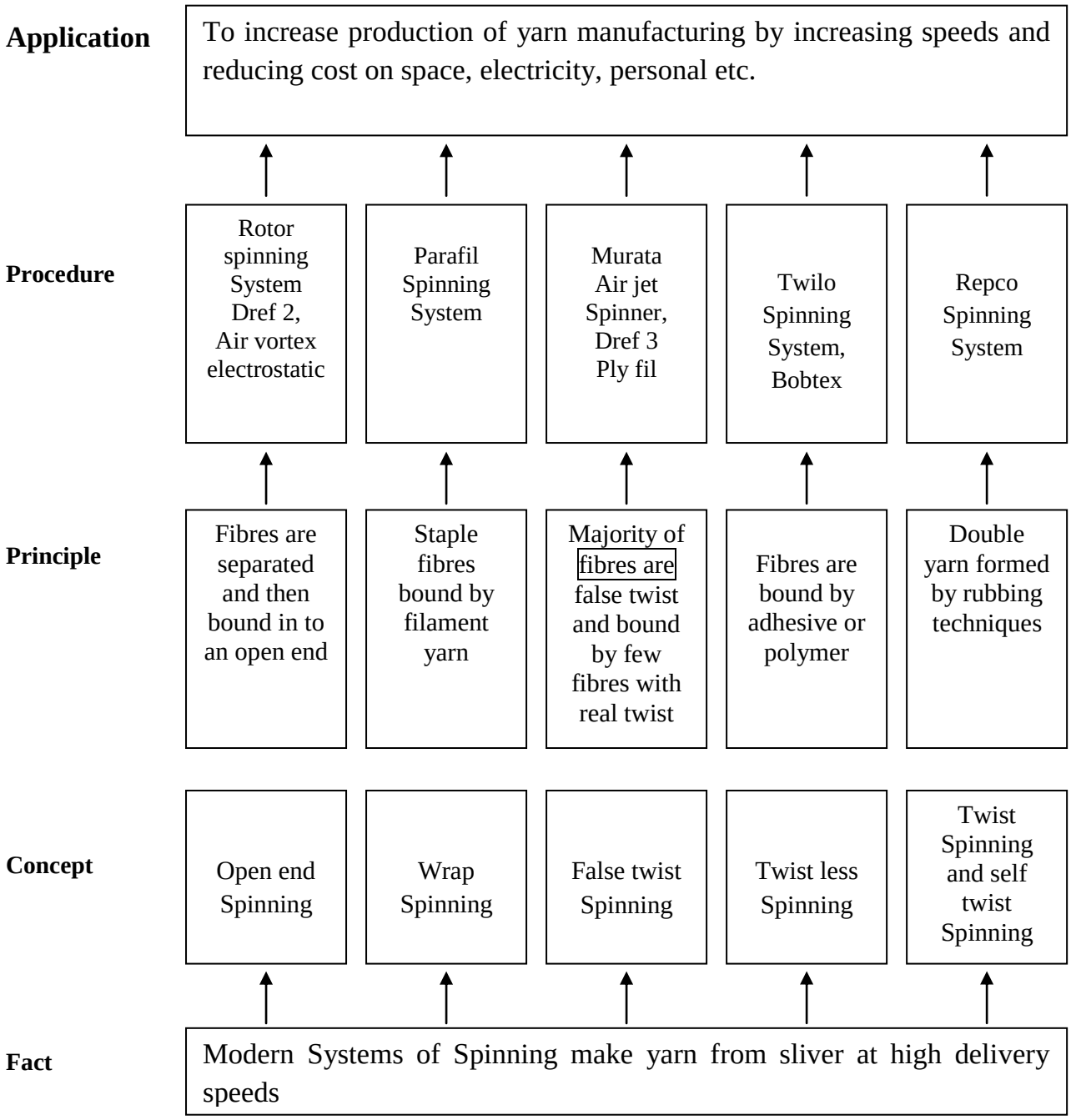
The last three semesters included study of Ring Spinning and the preparatory processes for Ring Spinning in the cotton, woolen and worsted systems. Textured yarn manufacturing was also dealt with. This semester deals with the different modern methods of yarn manufacturing – principles, process, machines and parameters.

General Objectives :

Students will be able to

1. Understand the modern methods of Yarn forming.
2. Describe the specifications of the machine, yarn characteristics, end uses of each system.
3. Compare different systems in terms of production cost, yarn characteristics etc.
4. Calculate the speeds, twist and production of rotor spinning system.

LEARNING STRUCTURE



YARN MANUFACTURING TECHNOLOGY IV

	Section I		
Topic No.	**Contents**	**Hours**	**Marks**
1.	**Introduction to modern Spinning methods.** 1.6 Advantages and disadvantages of Ring Spinning. 1.7 Advantages and disadvantages of modern Spinning Systems. 1.8 Classification of modern Spinning processes.	2	4
2.	**Open end Spinning Processes** 2.1 Principle of yarn formation in open end Spinning. 2.2 Electrostatic Spinning – process, specifications, advantages and problems. 2.3 Air vortex spinning, process, specifications, advantages and disadvantages. 2.4 Fritine Spinning – Dref 2, Master Spinner, dive spinning systems, specifications, parameters, characteristics of yarn, advantages and disadvantages.	5	9
3.	**False twist Spinning** 3.1 Principle of yarn formation by the false twist. 3.2 Murata airjet spinner – process, specification process and machine parameters, fibre characteristics that affect yarn. Yarn characteristics. 3.3 Dref 2 – Process, Specifications.	6	9
4.	**Twist less Spinning** 4.1 Principle of Yarn formation. 4.2 Twilo Spinning – Process, Specification, characteristics of yearns, parameters, advantages & disadvantages. 4.3 Bobtex Spinning- Process, specifications.	4	7
5.	**Double yarn manufacture** 5.1 Twist spinning – Process specifications, parameters, advantages and disadvantages. Characteristics of yarn. 5.2 Self twist spinning – repco spinal process, specifications, parameters, yarn structure and characteristics. 5.3 Plyfil spinning – process, specifications. 5.4 Wrap spinning – process, specifications, characteristics of yarn, parameters.	6	9
6.	**Comparison of the different systems of spinning.**	1	2

	SECTION II		
	Contents	**Hours**	**Marks**
1.	**Introduction to Rotor Spinning** 1.1 Principle of rotor spinning. 1.2 Passage of material in the rotor spinning machine .	2	4
2.	**Fibre properties and Fibre preparation** 2.1 Fibre properties required for the rotor spinning process. 2.2 Fibre preparation for rotor spinning – Blow room, carding, draw frame combing.	2	2
3.	**Opening unit of the rotor spinning machine** 3.1 Sliver in feed – trumpet, feed shoe, feed roller and their settings. 3.2 Opening roller – Speed, diometre, intensity of opening, clothing, housing. 3.3 Trash removal device. 3.4 Fibre guide passage – shape and speed of air flow.	2	4
4.	**Yarn Formation** 4.1 Fibre flow into rotor. 4.2 Formation of a fibre strand. 4.3 Back doubling. 4.4 Twisting of rotor spun yarns – twist insertion, calculation of twist, false – twist effect, wrapper fibres.	4	6
5.	**Rotor** 5.1 Firm and material of rotor, speed 5.2 Rotor groove – types, rotor diometre 5.3 Rotor drives, rotor bearing – twin disc bearing. 5.4 Cleaning of rotor.	2	4
6.	**Yarn withdrawal and winding** 6.1 Navel 6.2 Withdrawal tube 6.3 Winding process 6.4 Auxiliary winding devices	4	6
7.	**Automation of Rotor spinning machine**	1	2
8.	**Rotor Yarn** 8.1 Structure of rotor yarn. 8.2 Comparison of rotor yarn and ring yarn.	1	2
9.	**Calculations** 1. Production calculation 2. Speeds, drafts and fibre flux at various stages of the rotor spinning process.	4	6
10.	**Rotor Spinning of man made fibres** 10.1 Fibre characteristics required. 10.2 Machine and process parameters.		

Practicals:

1. Study of Air-jet Spinning machine.
2. Study of Friction Spinning machine.
3. Study of Wrap spinning machine.
4. Study of Bob-Tex Spinning machine.
5. Study of Rotor Spinning Machine.
6. Study of twisting unit of rotor spinning machine.
7. Study of winding unit of rotor spinning machine.

REFERENCE BOOKS

1. New Spinning Systems by W.Klein Textile Institute.
2. Spun Yarn Technology by Mr Eric Oxtoby.
3. Open end spinning by V.Rohlena
3. Spinning of Man-mades & blends by Prof. K.R.Salhotra

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : SIXTH
SUBJECT TITLE : FABRIC MANUFACTURING TECHNOLOGY IV
SUBJECT CODE : CTT 142604

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
3	3	6	3	80	20	50	50	200

RATIONALE

The conventional looms have its limitations with respect to quality and production. In the present era of globalization in our country, it is becoming imperative to use high speed / production looms. These looms should be capable of giving very high production and high quality products. These high-speed looms are Automatic looms and Shuttle less looms. These looms being costly looms, it should be used to its highest potential. For this students should be well equipped with the knowledge of these looms.
This subject intends to impart knowledge and skills in the area of Automatic looms i.e. Pirn changing looms, Shuttle changing looms. Shuttle less looms i.e. Projectile loom, Rapier loom, Air Jet loom, and Water Jet loom. This subject also covers Fancy weaving i.e. Leno weaving, Terry Pile weaving. Circular weaving.

	SECTION – I	Lectures	Marks
1	**Automatic Looms**: Preparation of warp and weft for automatic weaving. Main features of automatic looms, automatic weft replenishment, warp stop motion, automatic let-off motion, general requirements of automatic weaving, advantages of automatic looms. Pirn changing looms: - pirn changing mechanism on Northrop and Kovo pirn changing loom. Cutting of old and new weft. Timings and settings on pirn changing looms. Ruti Three try motions. Weft feeler motions .Northrop mechanical feeler No. 20, Northrop Electrical feeler	11	16
2	Shuttle changing looms, shuttle changing mechanism on Vickers Stafford shuttle changing loom and Toyoda shuttle changing loom. Difference between pirn changing and shuttle changing looms, warp stop motions - Northrop warp stop motion (castellated bar type)	06	10
3	Vibrator Bar Warp stop motion. Saka moto warp stop motion. Electrical warp stop motions - Lease Rod Electrical warp stop motion. Mather and platt electrical warp stop motion. Automatic let-off motions: -warp tension, tension variations in a weave cycle, tension variations in as beam weaves down (plain loom) Roper semi-positive let off motions, Ruti semi-positive lef-off motion.Automatic Negative Let off motion	07	14

	SECTION – II	Lectures	Marks
1	**Classification and principles of shuttle less looms.** Sulzer projectile looms. Drive to the Sulzer loom. Sulzer loom- picking cycle, picking mechanism, beating-up mechanism. Drawing-in of weft thread on single colour sulzer loom. Weft end gripper on projectile loom. Rapier loom: Principal of Rapier Loom, Northrop Rapier system, Rapier operation on Northrop Rapier loom, carrier type mechanism Draper shuttleles loom, Picking cycle on Draper Shuttleless loom. MAV Rapier loom:-Rapier drive on MAV Rapier loom, weft insertion on MAV Rapier loom. Rapier drive on saurer 400.Beat up mechanism on Saurer 400	11	15
2	**Air jet loom**: -principles of Air-jet loom, requirement of air jet picking: Passage of warp on Maxbo Airjet loom. Plan on Maxbo Air jet loom. **Water jet loom**: -principles of water jet loom, weft supply system on the water jet loom Picking cycle on water jet loom. Picking system on water jet loom.	06	10
3	**Principle of gauze and leno weaving**: leno weaving with flat steel doups wires with an eye and flat steel slotted doups wires (bottom douping system). counter leno ,double doups, counter leno, counter leno combined with plain, twill, satin function of easer bar & shaker device. **Principle of Terry weaving,** cam driven three pick terry mechanism, and dobby controlled terry mechanism, Principle of Circular weaving.	07	15

PRACTICALS

1. Dismantling and refitting of pirn changing mechanism on automatic Ruti 'B' loom.
2. Study of Beam gaiting on plain silk loom.
3. Study of Loom running on plain silk loom.
4. Study of Beam gaiting on dobby cotton loom.
5. Study of Loom running on dobby silk loom.
6. Study of Smash drawing on plain loom.
7. Study of Smash drawing on dobby loom.
8. Study of mechanical and electrical warp stop motion on Auto loom.
9. Study of semi-positive automatic let off motion.
10. Study of projectile loom.
11. Study of water jet loom.
12. Study of shuttle changing changing mechanism on 2 x 1 shuttle changing loom

REFERENCE BOOKS

1. Weaving mechanism: Volume-II by Prof. N. N. Banerjee
2. Fancy weaving motion by Prof. K. T .Aswani
3. The mechanism of weaving by Thomas W. Fox
4. Automatic weaving by Prof. A. S. Wagh
5. An introduction to automatic weaving by G. A. Bennett.
6. Modern Development in weaving machinery by V. Duxbury and G. R. Wray.
7. Watson's Advanced Textile Design by Z. J. Grosicki
8 Refresh your weaving by Aitken J.B.
9. Weaving Machines, Mechanism & Managements by Dr. M.K. Talukdar, Prof. P.K. Shreeramulu, Prof. D.B. Ajgaonkar .

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : SIXTH
SUBJECT TITLE : KNITTING TECHNOLOGY
SUBJECT CODE : CTT 142605

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
3	3	6	3	80	20	50	50	200

RATIONALE

Knitting Technology course aims at providing basic understanding of Knitted fabric structures, the concept of courses and wales, the intermeshing of loops in various ways, creating different knitted structures. This course also aims at the understanding of the basic concepts of manufacturing weft knitted and warps knitted structures. The course deals with fundamental mechanisms of weft knitting and warp knitting machines. This course aims at establishing relationship of knitting and knitted fabric designing. The purpose of this course is to develop skills in the students of designing different elementary knitted structures.

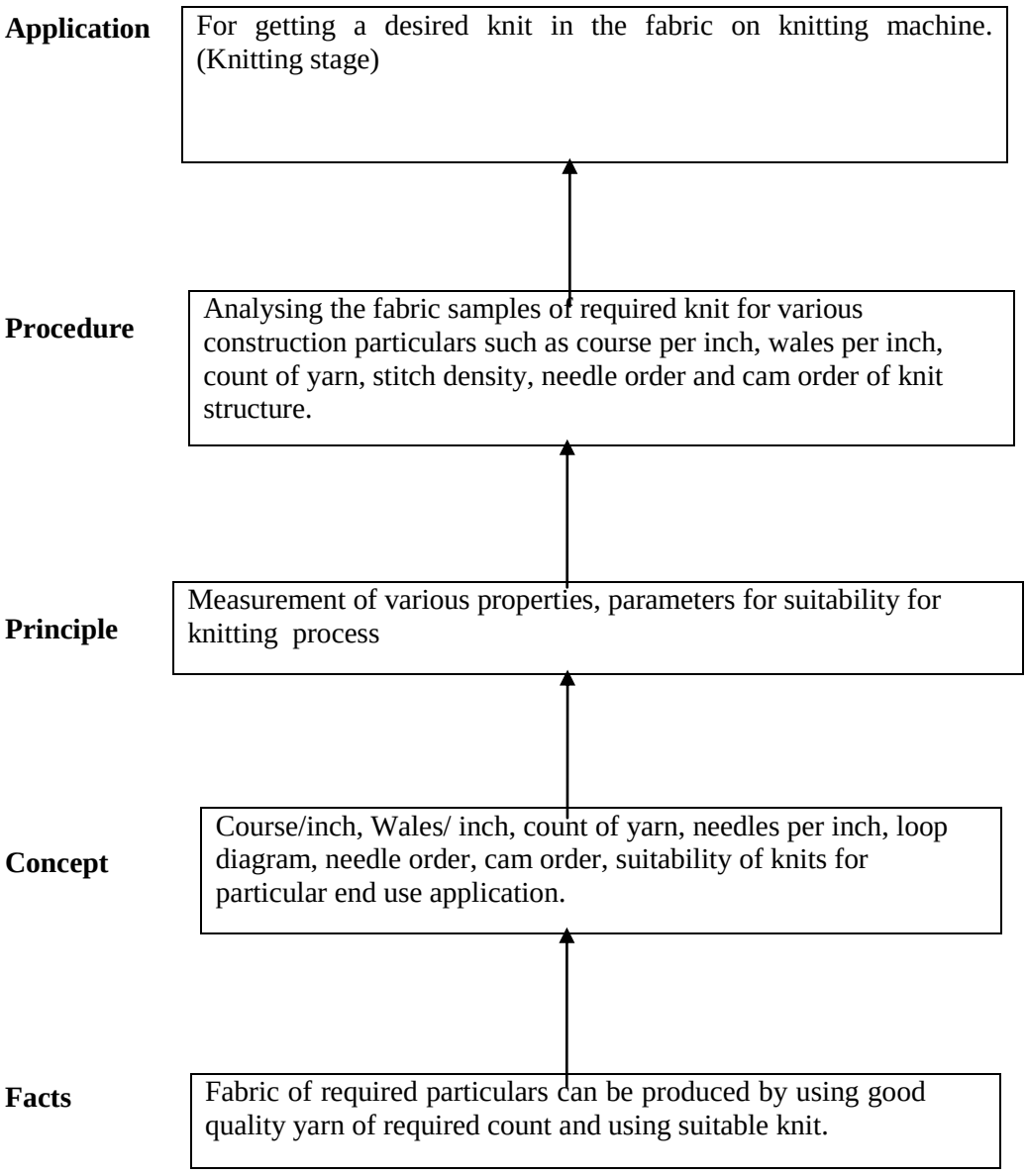
The Knitting Technology course deals with fundamentals of intermeshing of loops, their graphical representation on graph paper, concept of design, needle order, cam order, their significance, different elementary knitted structures, their derivatives, characteristics and properties of them, their usage for manufacturing different types of fabrics for apparels as well as furnishing end use application The thorough understanding of above concepts will lead to better understanding of core technologies of Textile Manufacturing process.

General Objectives:

Students will be able to

1. **Understand the concept of interlacement of course and wale.**
2. **Represent knitted interlacement on graph paper.**
3. **Construct loop diagram, needle order and cam order of knitted interlacement.**
4. **Draw various elementary knitted structures on graph paper.**
5. **Draw various derivatives of these elementary knitted structures.**
6. **Analyze the fabric samples of these structures during the practical.**
7. **Make necessary changes on the knitting machine to produce a fabric of required knit particulars on the knitting machine.**

Knitting Technology - Learning Structure:



SECTION-I			
Topic No.	**Topic**	**Hours**	**Marks**
1	**Introduction to Knitting Process** 1.1 Definition of weft and warp knitting. 1.2 Various ways of fabric manufacturing. 1.3 Properties of knits as compared to woven fabric. 1.4 Definition of basic terms in knitting (course, wale, stitch length, needle loop, sinker loop, face loop, back loop, course length). 1.5 Classification of weft knitting machine.	04	06
2	**Weft knitting** : **Single Jersey Machine** 2.1 Different zones in circular weft knitting machine.(creel, knitting zone, take up zone) 2.2. Details of creel zone a) Type of creel, their advantages and disadvantages b) Details of positive feeders, their functions and types c) Concept of multi-feeder machine 2.3 Details of knitting zone a) Functional elements of knitting machines b) Types of needles and its comparison c) Knitting action of different needles d) Sinker and its application e) Cylinder gauge, pitch , diameter f) Cams e) Feeder and feeder density 2.4 Details of take up zone a) Fabric spreader 2.5 Single Jersey Fabric a) Structure, loop diagram b) Knitting cycle on single jersey machine c) Characteristic features of single jersey fabric	06	10
3	**Weft Knitting machine – Double Jersey:** 3.1 Types of double jersey fabrics (Rib, Interlock and Purl) 3.2 Rib knitting machine – loop diagram, machine features, Needle arrangement, trick arrangement and knitting cycle. Different rib structures, loop diagram, 3.3 Interlock machines – Graphical representation, loop diagram, machine features, needle arrangement, cam arrangement 3.4 Purl knitting machine – Graphical representation, loop diagram, needle arrangement, and principle of needle transfer. 3.5 Characteristics of Rib, Interlock and Purl fabrics.	06	12

4	**Weft Knitted Fabric Design Aspect** 4.1 Different types of stitches like knit, tuck and miss, loop diagram of tuck and float stitch. Effect of tuck and float stitch on fabric properties. 4.2 Representation of stitches on point paper(line diagram, symbolic and diagrammatic notation 4.3 Concept of design, needle order and cam order with example. 4.4 Derivatives of single jersey fabric, - La-coste, Cross tuck, Satin, Jersey blister, thick fleece 4.5 Derivatives of Rib structures – Milano rib, Double pique, Pique, Poplin, Evermonte. 4.5 Derivatives of Interlock structures – Punto- di-roma, Ottoman rib, texi pique 4.6 Construction of Sateen checks, Weaves constructed on Satin base	06	08
5	**Fabric defects and Calculation :** 5.1 Weft knit fabric defects and remedies 5.2 Knitting calculations.	02	04
	TOTAL	24	40

SECTION-II

Topic No.	Topic	Hours	Marks
6	**Basics of warp knitting** 6.1 Basic warp knit structures 6.2 Basic terms in warp knitting - Under lap, Over lap, closed lap, open lap 6.3 Classification of warp knitting machines 6.4 Comparison between warp knitting and weft knitting.	4	06
7	**Tricot** 7.1 Knitting elements on Tricot machine. 7.2 Passage of yarn on Tricot machine 7.3 Knitting cycle on Tricot machine. **Raschel** 7.4 Knitting elements on Raschel machine. 7.4 Passage of yarn on Raschel machine 7.5 Knitting cycle on Raschel machine. **Comparison between Tricot and Rachel**	08	16
8	**Representation of Warp knit structures** 8.1 Use of chain links- different types of chain links, method of representation on point paper, lapping diagram, lapping notation 8.2 Single bar structures 8.21 Chain or Pillar stitch (Closed lap, open lap) 8.22 Tricot lap 8.23. 2 and 1, 3 and 1, 4 and 1 lapping 8.24 Atlas lap 8.3 Double bar structures 8.31 Full tricot 8.32. Locknit 8.33 Reverse Locknit 8.34 Satin 8.35 Queen's cord 8.36 Sharkskin	08	12
9	**Fabric defects and calculations** 9.1 Common defects of warp knit fabrics and remedies 9.2 Calculations for warp knits	04	06
	TOTAL	24	40

Knitting Technology Practical:

The Term Work consists of experiments from Group A and solutions to Assignments given in class from Group B

Group A: List of Experiments: Elementary Woven Structures

1	Introduction to knitting elements – knitting needles, sinkers
2	Analysis of Single jersey fabric
3	Analysis of single jersey fabric – Horizontal Stripe design.
4	Analysis of 1 x 1 Rib sample
5	Analysis of 2 X 2 Rib sample.
6	Analysis of Interlock sample.
7	Analysis of tricot sample.- 2 bar structure
8	Analysis of tricot sample. – 3 bar structure

Group B: Solutions to the Assignments given in class.

Assignment Number	Topic
1	Draw diagrams of different types of needles and label the parts
2	Draw structure of single jersey. Draw loop diagram and graphical representation of the same.
3	State characteristics and properties of single jersey fabric.
4	Draw structure of 1 X 1 Rib. Draw loop diagram and graphical representation of the same.
5	State characteristics and properties of Rib fabric.
6	Draw structure of Interlock. Draw loop diagram and graphical representation of the same.
7	State characteristics and properties of Interlock.
8	Draw loop diagram and graphical representation of following single jersey structures. La-coste, Cross tuck, Satin, Jersey blister, thick fleece.
9	Draw loop diagram and graphical representation of following Rib structures. Milano rib, Double pique, Pique, Poplin, Evermonte.
10	Draw loop diagram and graphical representation of following Interlock structures. Punto- di-roma, Ottoman rib, texi pique.
11	Describe the concept of design, needle order and cam order with the help of an example.
12	Calculations of weft knitting machine – Production calculations, GSM calculations.
13	Describe passage of yarn on Tricot machine
14	Describe the knitting cycle on Tricot machine with the help of neat diagram.
15	Describe passage of yarn on Raschel machine
16	Describe the knitting cycle on Raschel machine with the help of neat diagram.
17	Write a detail note on patterning and function of chain links. Draw diagrams of chain links
18	Draw lapping diagrams of Single bar structures - Piller stitch, Tricot lap, 2 and 1, 3 and 1, 4 and 1 lapping. Write lapping notation for the same.
19	Draw lapping diagrams of double bar structures - Full tricot, Locknit, Reverse Locknit, Satin Queen's cord, Sharkskin. Write lapping notation for the same.
20	Warp knit machine- Production calculations.

Note: For Assignment

1. **Assignments should be solved in separate A-4 size journal.**
2. **Assignments will be assessed progressively.**

References:

Sr No.	Name of Book	Author	Publication
1	Knitting Technology	David Spenser	
2	Knitting Technology	Prof. D.B.Aajgaonkar	The Textile Institute, 10 Blackfriars street, Manchester : M35DR
3	Fundamentals and Advances in Knitting Technology	Sadhan Chandra Ray	Woodhead Publishing India in Textiles

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : SIXTH
SUBJECT TITLE : PROJECT
SUBJECT CODE : ATT 143606

Teaching Scheme				Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	OR	TOTAL
	03	03	--	--	--	--	50	50	100

Topic -
In the beginning of the semester, every student individually will be assigned a seminar topic in the emerging / perspective field in the area of textiles such as Spinning, Weaving, Fibres, Testing, and chemical processing and alike.

Project Preparation and Presentation -
Students will collect the information on the above subjects and submit the report both soft and hard copy on the dates specified by the concerned faculty. The project report will be of minimum 25 pages. The spacing between the lines will be 1.5. The font size will be 12 point with Times New Times Roman. The list of reference must be given at the end of project report. The list of reference should be written as per the Textile Research Journal format.

Term Work Marks –

Project Report - 50Marks
Oral Presentation - 50 Marks

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY
COURSE CODE : DMTT
SEMESTER : SIXTH
SUBJECT TITLE : INDUSTRIAL VISIT
SUBJECT CODE : ATN 143607

Teaching Scheme				Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	OR	TOTAL
	03	03	--	--	--	--	50	50	100

Objective:
To provide an opportunity to observe industrial activities and gather related technical and non-technical information about industry working.

Frequency
Minimum Three visits.

Industry:
Spinning, Weaving, Garment, Processing, Synthetics, Textile Chemicals & Auxiliaries, R&D, Machinery Manufacturing, Marketing etc. (Any One).

Observations:
Observe working of industry and collect data as per guidelines in the manual, study machineries / systems / practices.

Report:
* Report should have Title on Cover of Report as per Format.
* Report should be prepared as per following sequence -

Page No.	Content
i.	Certificate from Institute as per Format.
ii.	Acknowledgement
iii.	Programme of Training
iv.	Introduction of Industry
v.	Index with Page Numbers
vi.	Plant/Dept. Layout
vii.	Organization Structure.
viii.	(Onwards) Department wise / Product wise Report.

Report should be based on own Observations made, data collected during visit (i.e. Study of Machinery, Actual Production and Efficiency, Production Control, Modern Developments in Machines/Process, Flow Chart of Processes, Speed of Important Parts, Labour Allocation, Maintenance Practices, Process Control & Quality Control Activities etc.) roles and responsibilities of various Workers/Technical Staff.

Assessment:
Viva-voce to be conducted & Term Work Marks is assigned on the basis of student's performance in viva-voce, conducted by internal and external examiners from related field.

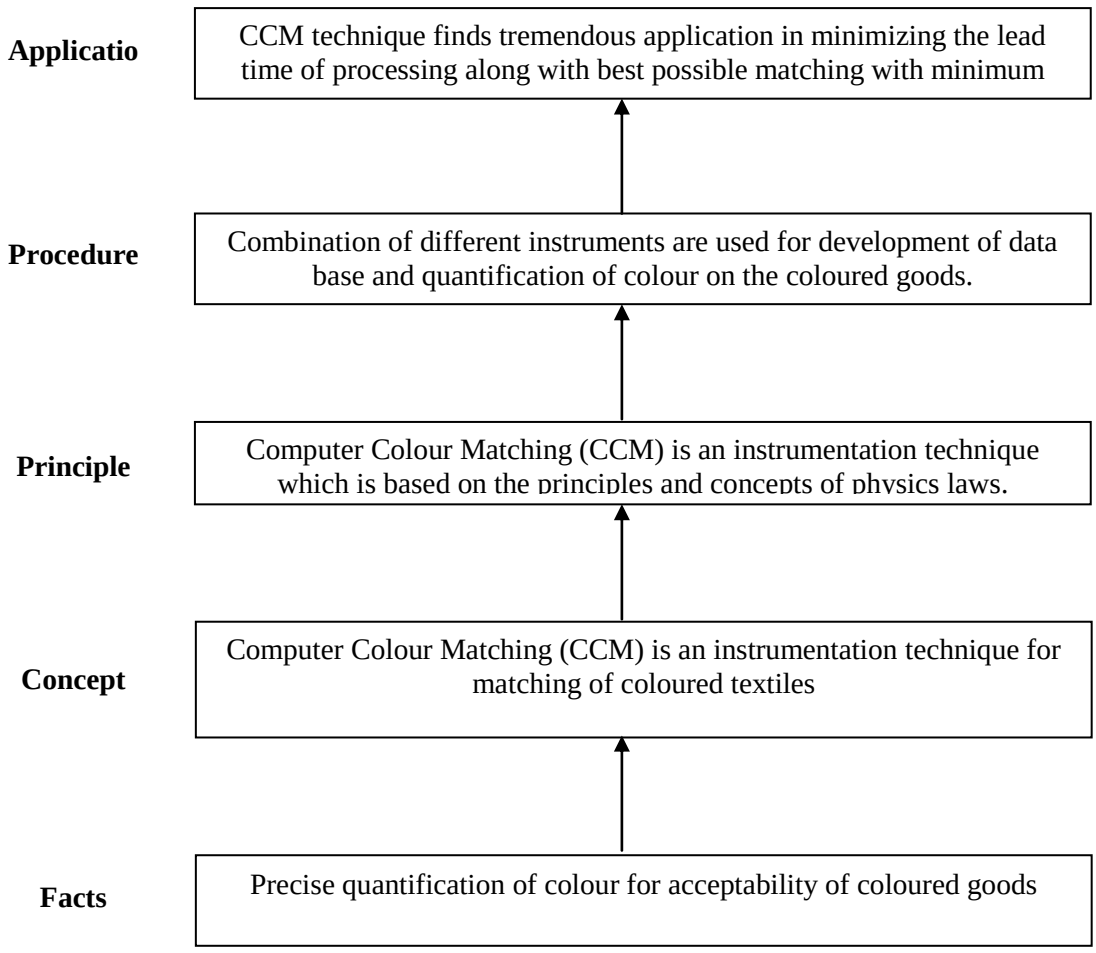
COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/TEXTILE CHEMISTRY/DIPLOMENT IN KNITTING TECHNOLOGY
COURSE CODE : DMTT/DMTC/DKT
SEMESTER : SIXTH
SUBJECT TITLE : COMPUTER COLOUR MEASURMENT
SUBJECT CODE : DTC 144608

Teaching Scheme				Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	OR	TOTAL
	03	03	--	--	--	--	50	50	100

RATIONALE

This subject is aimed at educating the students the importance of colour in life and the basic theories involved in colour mixing, faulty vision, colour illusion, colour matching etc. It also introduces the use of computer in colour matching. It is also aimed at introducing the students to measurement of colour by Spectrophotometers, different colour order systems and the actual use of computer in colour matching.

Learning Structure: Computer colour Measurement



	Name of Unit	No. of Practical
1	**Introduction to Colour** **Specific Objectives:** Colour Sensation – physiological and psychology, mechanism of color vision, Colour Colourant (Dyes) and Colouring (Dyeing), Colour as an Physical Stimulus. Theory of Colour, Perception of Colour in terms of source of light, Objects of observer	00
2	**Light (Natural & Artificial light) and it's composition Specific Objectives:** **The electromagnetic spectrum – the optical Region.** Types Of radiation (Radio waves, X - Rays, Visible radiation, Ultraviolet & X-Rays). Artificial Light or Sources (Light bulb or Fluorescent lamps), Definition of Wavelength (nm),Source and Illuminant. **Interaction of light with matter:** Transmission Absorption & Scattering of Light, Beer's Law, Lambert's Law. **Introduction to Colour Matching Cabinet:** Utility of Colour matching booths in the textile industry. Brief description of a booth.	01
3	**Colour Mixing Theories & Colour Order Systems** Additive mixing & Secondary mixing of coloured lights. **Chromaticity Diagram /Co-ordinate:** Excitation purity ,Dominant Wave length, Complimentary Dominant Wavelength **Colour Order Systems:** Fundamentals of Munsell Colour Order System (Hue, Value and Chroma), Ostwald Colour Order System (Tint, Tone and Shade), Fundamentals of CIE LAB Colour specification (L,A,B,C,H) systems. Importance of the CIE system in the Textile Industry Introduction to CIE 1931 and 1964 CIE Standard Observer. Importance of these observers in measurement of colour, Introduction to CIE Standard sources and their importance for the measurement of colour. CIE numerical system for colour definition and its components – illuminants, the versions of the standard observer, the colour scales, chromaticity diagram.	01
4	**Metamerism & Flourescent Colours Specific Objectives:** Types of Metamerism (Observer, Illuminant, Geometric & Instrument). Metameric (Conditional) and Non-Metameric (isomeric, invariant, spectral) matches. Introduction to Fluorescent whiteners ,Fluorescent dyes. Characteristics of fluorescent dyes, Difference between regular and Fluorescent dyes. Phosphorescence effect	01
5	**Human Colour Vision Specific Objectives:** **Colour Vision and Colour defective vision of the Human Eye:** Introduction to the Human Eye, Colour vision , Colour blindness, Dichromats and Anomalous Trichromats **Colour Illusions:** After image of Colours,simultaneous_and Successive contrast	01
6	**Fundamentals of Colorimetry and Spectrophotometry Specific Objectives:** Fundamentals of Colorimetry (Tristimulus clorimetry Colorimetric match etc), Fundamentals of Spectophotometry, (Reflectance Transmittance, etc) Difference between Colorimeters and Spectrophotometers. Basic Components of Spectrophotometers (Light Source, Viewing Conditions ,Monochromator and Detector). Types of Spectrophotometers i.e Reflectance and Transmittance, Basic difference between them), Study of Dual, Single & Double Beam Spectrophotometers, Selection of Spectrophotometer based on application requirement and budget.	01

7	**Introduction to Computer Colour matching system.(CCM) Specific Objectives:** Visual based Colour Matching & Instrumental based Colour Matching, Utility of Computer Matching System. Measurement of reflectance/transmission using Computer Colour Use of this system for Shade-bank, Database, Colorimetric-based calculations, setting tolerance, initial recipes, batch correction, strength calculation, adjustments and shade sorting.	01
8	**Numerical Colour Matching using CCM:** Kubelka Munk function, and its use Reflectance and K/S value, relationship between dye concentrations and a) reflectance values and b) K/S values, reflectance and K/S curves of dyed samples. How to measure the Colourant Strength of dyes, to find unknown concentration using Kubelka Munk theory. Matching of Shades (Preparation of calibration dyeing) Matching technique for evaluation of colour difference, whiteness index .etc . Preparation of data base, Preparation *of* database for Single fabrics and blended fabrics.	06
9	**Colour Difference Assessment:** Visual assessment, standard conditions, methods and problems, assessment of colour difference, setting up of objective pass/fail standards.	04

Practical

- Students should complete Practical on the above mentioned topics which are organized by the faculty from time to time.
- Students have to write it in A4 size Journal
- Continuous assessment of Practical will be done.
- **Practical marks** Practical will be evaluated on regular basis as well will be evaluated in the form of Orals.

LIST OF PRACTICAL

1. Demonstrations of Additive & Substrative mixing colours.
2. Simple experimentals to demonstrate Direct Image, After image Colour contrast & Successive contrast
3. Principles of Computer colour matching system & Different light sources used in computer colour matching system
4. Measurement of reflectance using spectrophotometer.
5. Demonstrations of Colour difference and colour strength measurement using computer colour matching system.
6. Evaluation of colours in different light sources using computer colour matching system.
7. Evaluation of florescence, whiteness Index. & yellowness Index.
8. Various components of spectrophotometer & CCM
9. Demonstrations of Shade sorting using computer colour matching system & Pass/Fail programme using computer colour matching system.
10. Colour matching cabinet for its practical utility and finding the chromaticity values from reflectance values.
11. Experiment on Matching of the shade using computer colour matching systems.
12. Experiment on Metameric and Isomeric match.
13. Experiment on Evaluation of fastness properties.

REFERENCES

1. Sule A.D., "Computer Colour Analysis", New Age International Publishers, 2002
2. Shah H.S. and Gandhi R. S., "Instrumental Colour Measurement and Computer Aided Colour Matching for Textiles", Mahajan Book Publication, 1990
3. Park J., "Instrumental Colour Formulation: A Practical Guide", Wood head Publishing, 1993, ISBN 0 901956 54 6
4. McLaren K., "The Colour Science of Dyes & Pigments", Adam Hilger Ltd., 1983, ISBN, 0-85274-426-9
5. D. Travis, "Effective Colour Displays", Academic Press,1991, ISBN 0-12-697690-2
6. Introducing colours - A Teacher's booklet on colour, published by the Society of dyes and Colourists.
7. Colour Technology by F.A. Taylor, Oxford University press.
8. The measurements of colour by W. D. Wright, Hilger and Watts Ltd.
9. Fundamentals of Computer Colour matching - By Colour group of India.
10. Computer aided colour and design by Dr. R. S. Gandhi and Dr. H. S. Shah.

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/ TEXTILE CHEMISTRY/KNITTING TECHNOLOGY
COURSE CODE : DMTT/DMTC/DKT
SEMESTER : SIXTH
SUBJECT TITLE : NARROW FABRIC MANUFACTURING TECHNOLOGY
SUBJECT CODE : DTC 144509

Teaching Scheme				Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	OR	TOTAL
---	03	03	--	--	--	--	50	50	100

RATIONALE

Now days, there is wide application of short width fabrics. These fabrics are called as narrow fabric. These fabrics are produce by different methods.
This subject intends to impart knowledge about narrow fabrics, their different application and production technique.

	Name of Unit	No. of Practical
1	Introduction, definition and Scope of narrow fabric. Different types of narrow fabric. **Narrow Fabric Weaving*:***- a. Introduction, Scope of narrow fabric weaving, applications b. Preparation – Machines and processes for assembling warps, various, warping processes used, weft preparation. c. Technology of narrow fabric weaving – Machine construction, Shuttle looms, needle looms, warp feed systems from beams, creel for elastomeric yarns, shedding by cam and links, pattern chain preparation for different weaves, weft insertion systems(needle loom) , various selvedge forming systems on needle loom, drives to different elements, take up. d. Application of weaves in narrow fabric weaving.	10
2	**Manufacture of Labels*: -*** Applications, labels with woven selvedge and cut selvedge. Printed labels, fabric specifications, specifications of jacquard used, feed material specifications.	6
3	**Knitted Narrow Fabric** **Introductin, Scope and application** **Machinery requirement use of different knitting machine**	6
4	**Braiding*:*** - Introduction, classification (rounds and flat braids), applications,raw material used for braids, machines used for braiding (drive, yarn supply, Braiding technology, take up.	10
5	**Nonwovens :-** Definition, classification according to raw material and method of production, Comparison of productivity with other technologies, Raw material used, process flow for manufacturing various non-woven techniques, introduction to web forming and bonding methods. **Geo Textiles:-** Definition, classification, Raw materials, functions and area of application.	10
6	Use CAD In narrow fabric manufacturing	8

Practical

- Students should complete Practical on the above mentioned topics which are organized by the faculty from time to time.
- Students have to write it in A4 size Journal
- Continuous assessment of Practical will be done.
- **Practical marks** Practical will be evaluated on regular basis as well will be evaluated in the form of Orals.

Course : DMTT/DMTC/DKT
Semester : Sixth
Subject Title : Production Planning and Control
Subject Code : DTC 144610

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	Paper HRS	TH	Test	Practical	OR	TW	TOTAL
--	03	03	--	--	--	--	50	50	100

Rationale:-

To develop skill to identify site for starting a knitting unit
To develop skill to prepare a plan for installations of machines
To develop skill to identify various stages of process involved
To develop skill to plan machinery required
To develop skill to plan man power required
To develop skill to find the cost of product

Assignments:

Students will be given product accordingly they will develop a project report based on following points

i. Market Survey
ii. Site selection for starting a knitting unit
iii. Identifying various stages of production process
iv. Identifying machinery required
v. Prepare various layouts
vi. Illumination required
vii. Man power required
viii. Product costing, break even etc.

COURSE NAME : **DIPLOMA IN MAN MADE TEXTILE TECHNOLOGY/CHEMISTRY/KNITTING TECHNOLOGY**
COURSE CODE : **DMTT/DMTC/DKT**
SEMESTER : **SIXTH**
SUBJECT TITLE : **ELECTRONICS IN TEXTILE**
SUBJECT CODE : **DTC 144611**

Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	Paper HRS	TH	Test	Practical	OR	TW	TOTAL
--	03	03	--	--	--	--	50	50	100

RATIONALE

This subject is aimed at educating the students the importance of electronics in textile, this will help the students in operating and maintaining the various control panel used for textile machineries.

	Name of Unit	No. of Hours
1	**Electronics Components** Electronics components, passive components, resistors, color coding of resistors, variable resisters, capacitors, color code used for capacitors, variable capacitors, inductors.	05
2	**Semiconductors** Semiconductor materials, metals, insulators semiconductors, intrinsic semiconductor, extrinsic semiconductors, p-n junction diode, junction theory, VI characteristics of p-n junction diode, use of diode in rectifiers, half wave rectifier, full wave rectifiers, performance of rectifiers, filters-shunt capacitor filter, series inductor filter, filter, LC filter, zener diode, zener regulator, diode specification.	07
3	**Transistor** Junction transistor structure, working of transistor, relation between different currents in a transistor, transistor amplifying action transistor configurations, transistor characteristics (More emphasis CE configuration). Basic CE amplifier transistor data sheet, transistor testing.	07
4	**Op-Amp** Introduction, block diagram, symbol, ideal op-amp, open loop op-amp configuration, Concept of feedback in amplifier, op-amp with negative feedback, IC741-pinout and specifications, applications	05
6	**Optoelectronic Devices** Classification of optoelectronic devices- emitters, sensors, optocouplers, LED, photodiode, phototransistor, LDR, photo voltaic cell, application of optoelectronic devices in textile	06

7	**Transducers** Transducer classification – Primary and secondary transducers, active and passive transducers, analog and digital transducers, advantages of electrical transducer, Basic Requirements of a transducer Pressure measurement – Diaphragm bourdon tube Bellows. Temperature Transducers – Resistance temperature Detector (RTD), Thermocouple, Thermisters Strain Measurement – Introduction, factor affecting strain measurement, types of strain gauge, Theory of operation of resistance strain gauge, types of electrical strain gauge, properties of strain gauge, materials for strain gauges, electrical strain gauge, properties of strain gauge, materials for strain gauges, Linear variable differential transformers (LVDT), Capacitive transducers, Piezo electric transducers. Note: Emphasis should be given on applications of above transducers in textile industry	09
8	**Electromechanical Devices** Electromagnetic relay, Reed relay, Solenoid valve, Limit switches	04
9	**Introduction to Digital Electronic** Difference between digital and analog electronics, digital gates, Working, truth table and Boolean equation, with examples from TTL family.	05

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