sasmira's INSTITUTE OF MAN-MADE TEXTILES

Teaching Examination Scheme

Syllabus - Scheme 2

DIPLOMA IN KNITTING TECHNOLOGY

(D K 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 Knitting Technology (DKT)** 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

B. V. DOCTOR	**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
							Progressive		Final exam			
				L/TU	P	Total	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

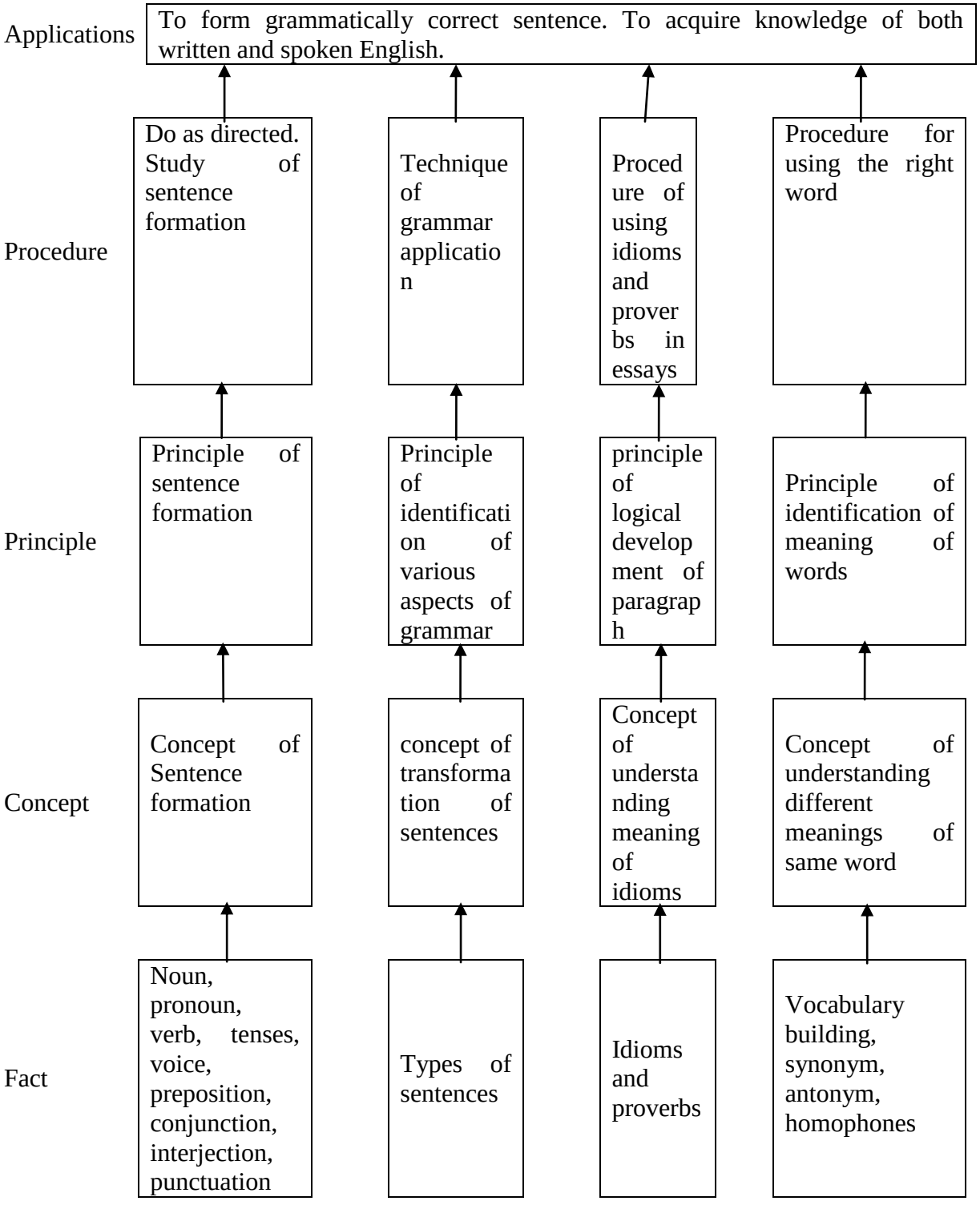
The most commonly used medium to express oneself is language. English being a global language is used in all the spheres of human life i.e. personal, professional and social. A diploma student is expected to be proficient in English language and pursue the existing course of study to handle the future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

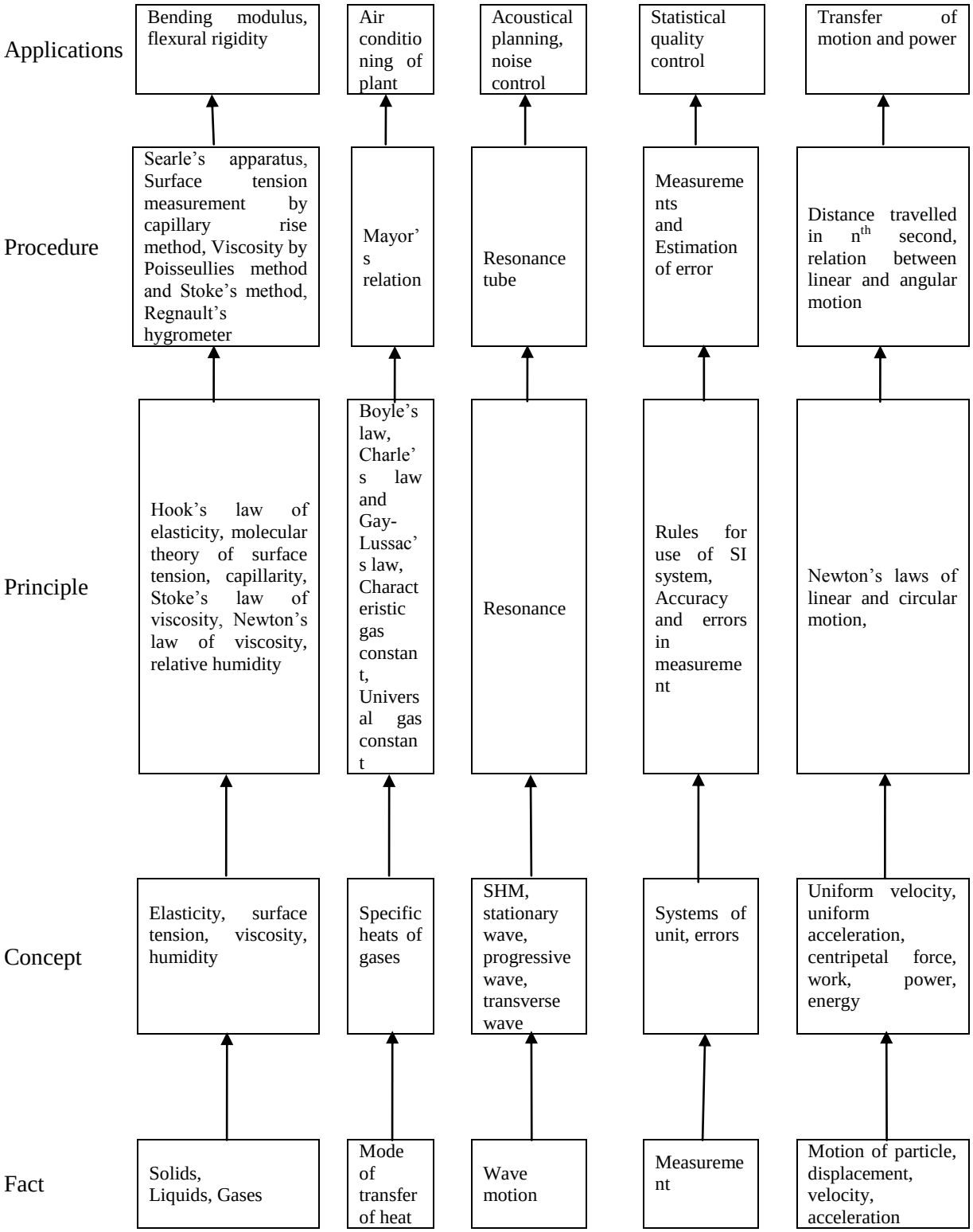
Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03/01	03	07	03	80	20	50	50	200

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:

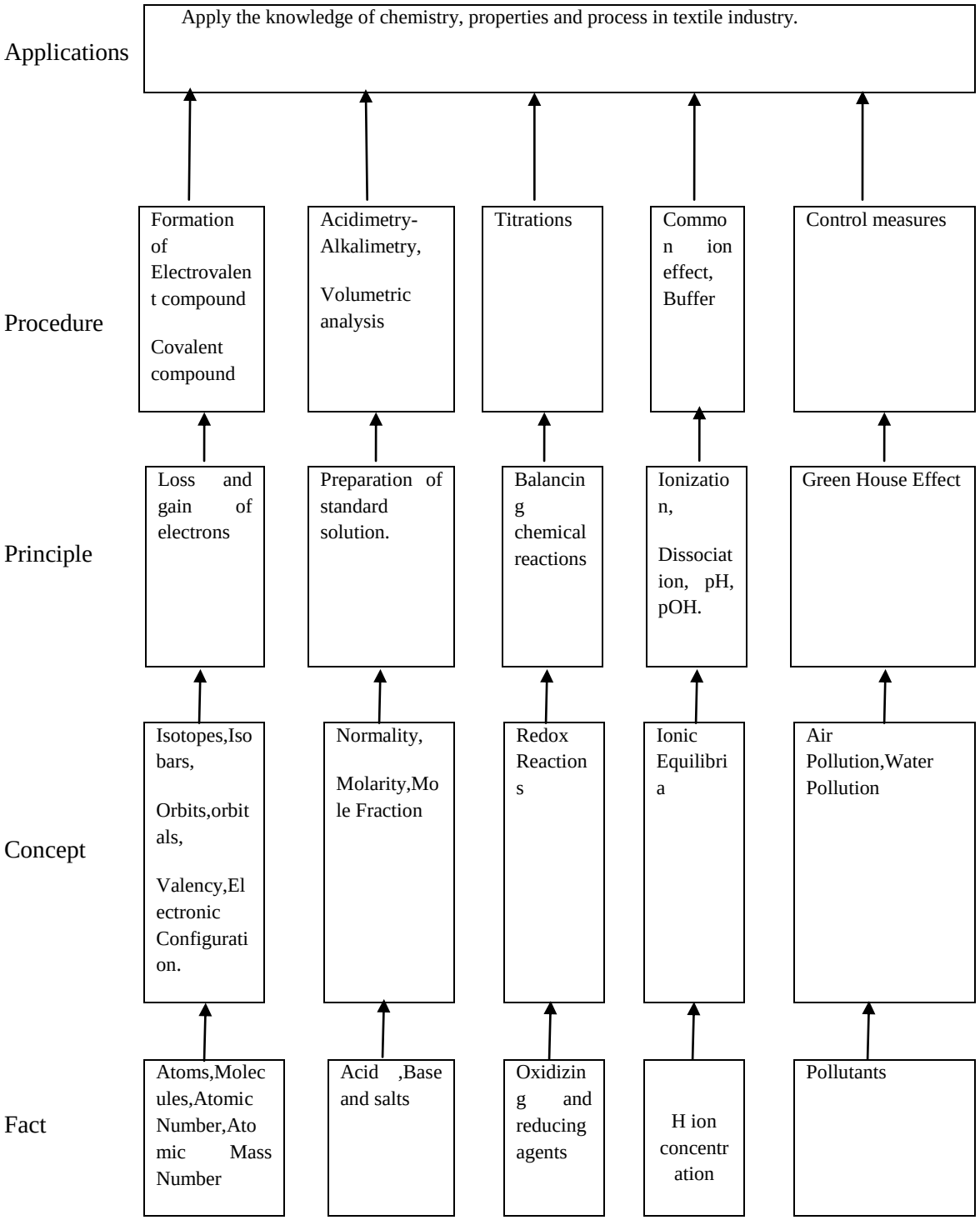
Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	Paper HRS	TH	Test	Practical	OR	TW	TOTAL
03/01	03	07	03	80	20	50	---	50	200

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

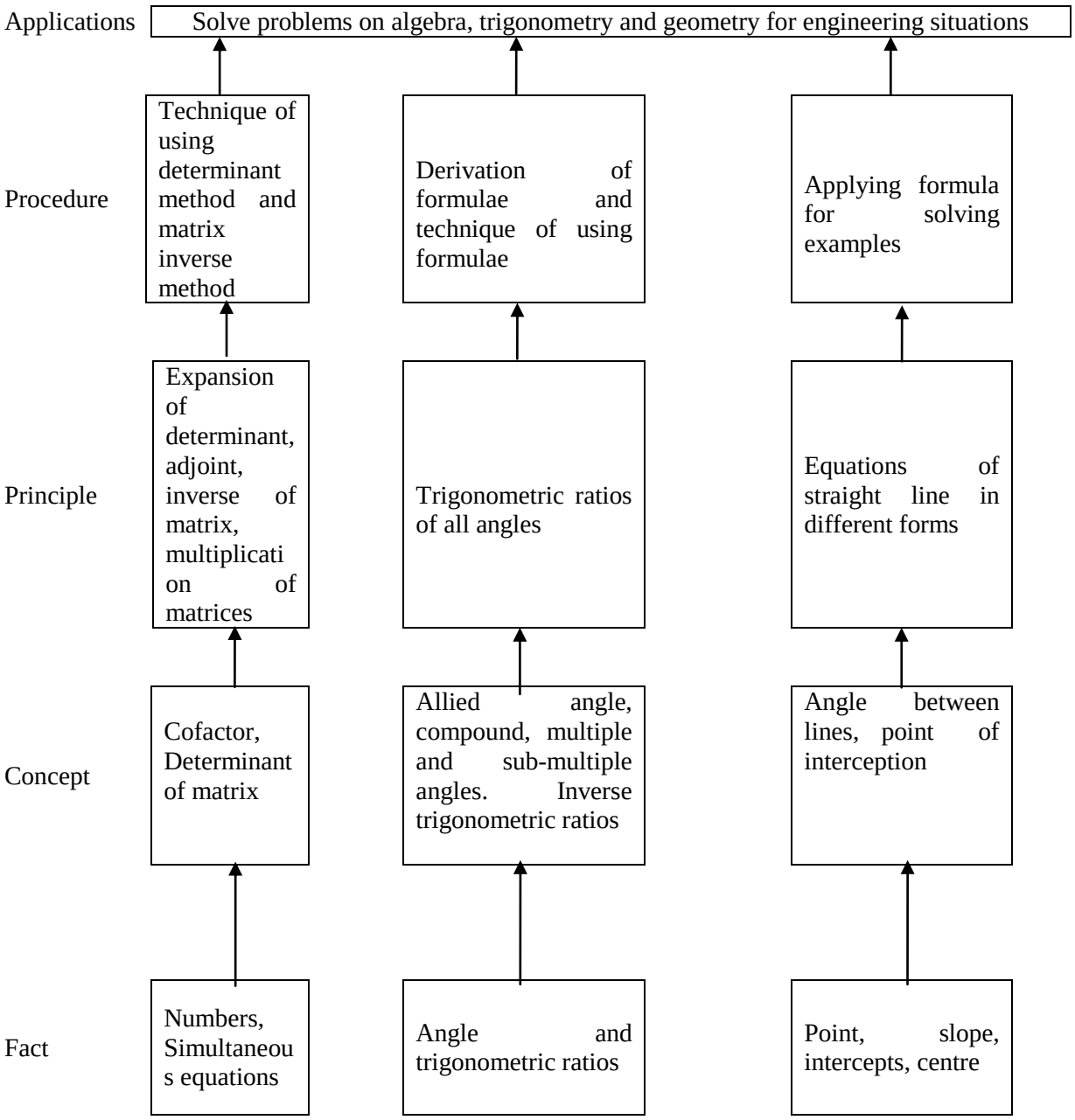
Mathematics is the foundation of science and technology. The subject intends to teach students basic facts, concepts, principle and procedure of mathematics as a tool to analyze Engineering problems and as such lays down foundation for understanding the engineering and core technology subjects.

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:

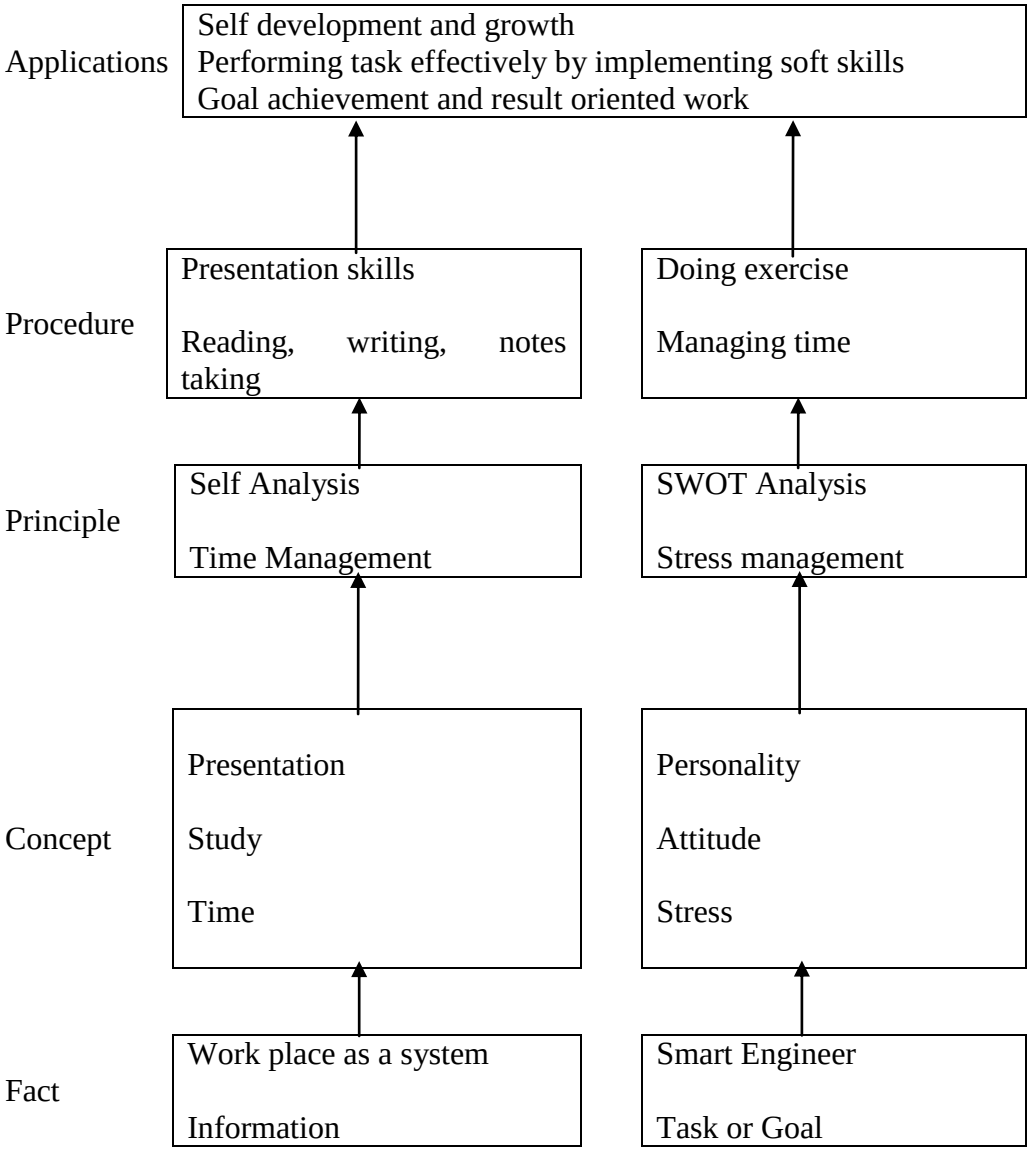
Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	OR	TW	TOTAL
01/--	02	03	--	--	--	--	50	50	100

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

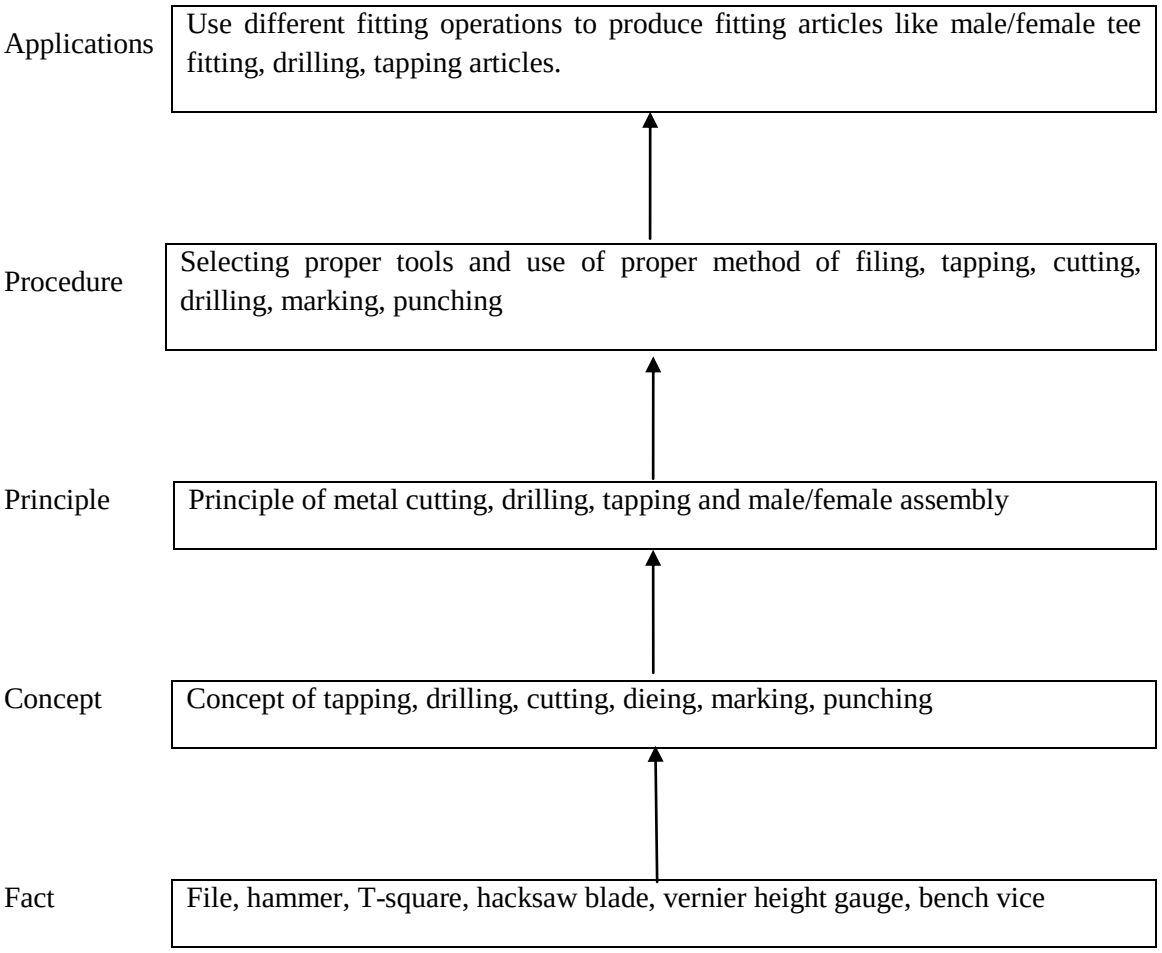
RATIONALE

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

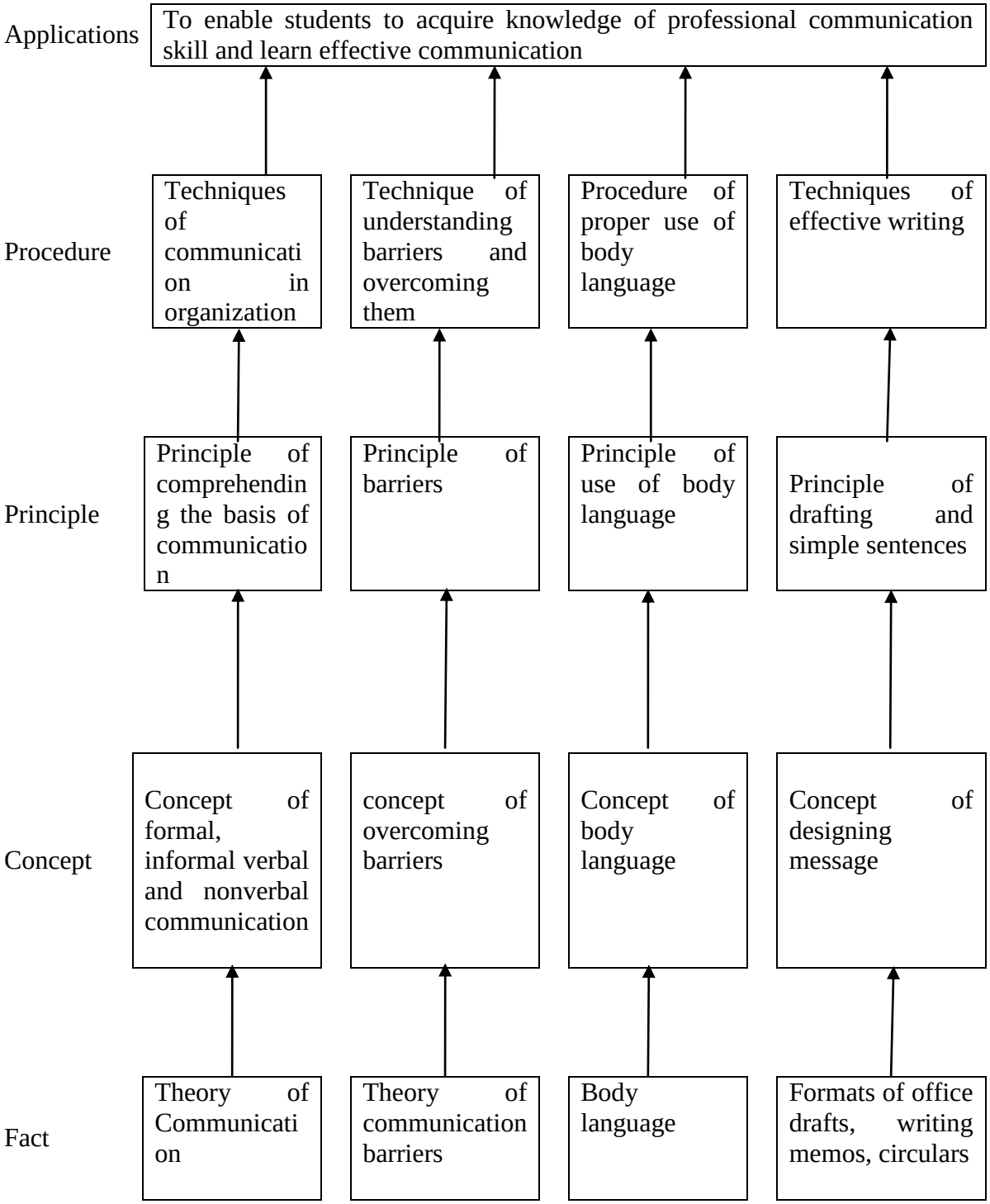
In this age of globalization, competition is tough. Hence effective communication skills are important. Communication skills play a vital and decisive role in career development. The subject of Communication Skills introduces basic concepts of communication. It also describes the verbal, non-verbal modes 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:

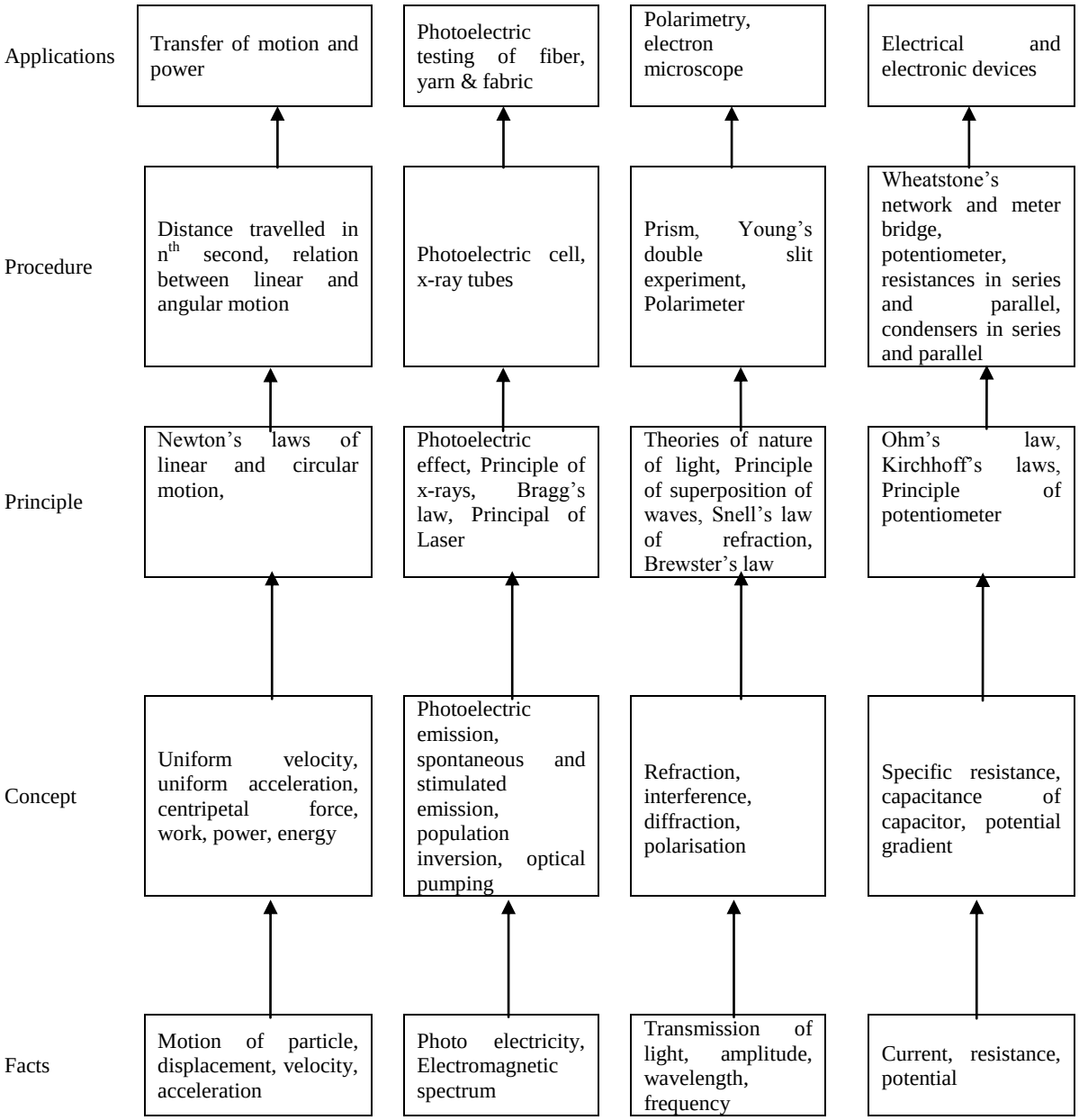
Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	03	06	03	80	20	50	50	200

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:

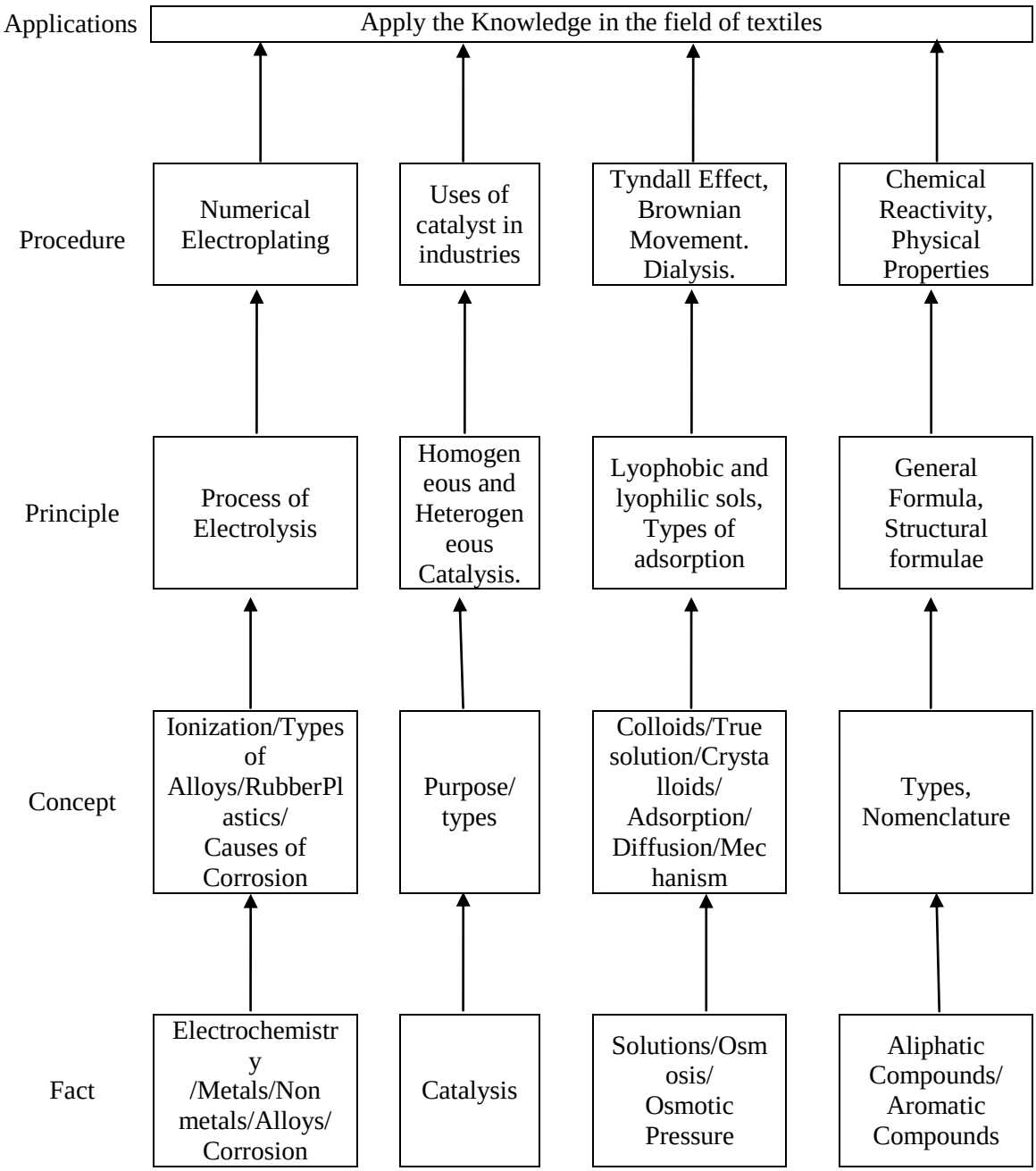
Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	Paper HRS	TH	Test	PR	OR	TW	TOTAL
03/-	03	06	03	80	20	50	---	50	200

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:

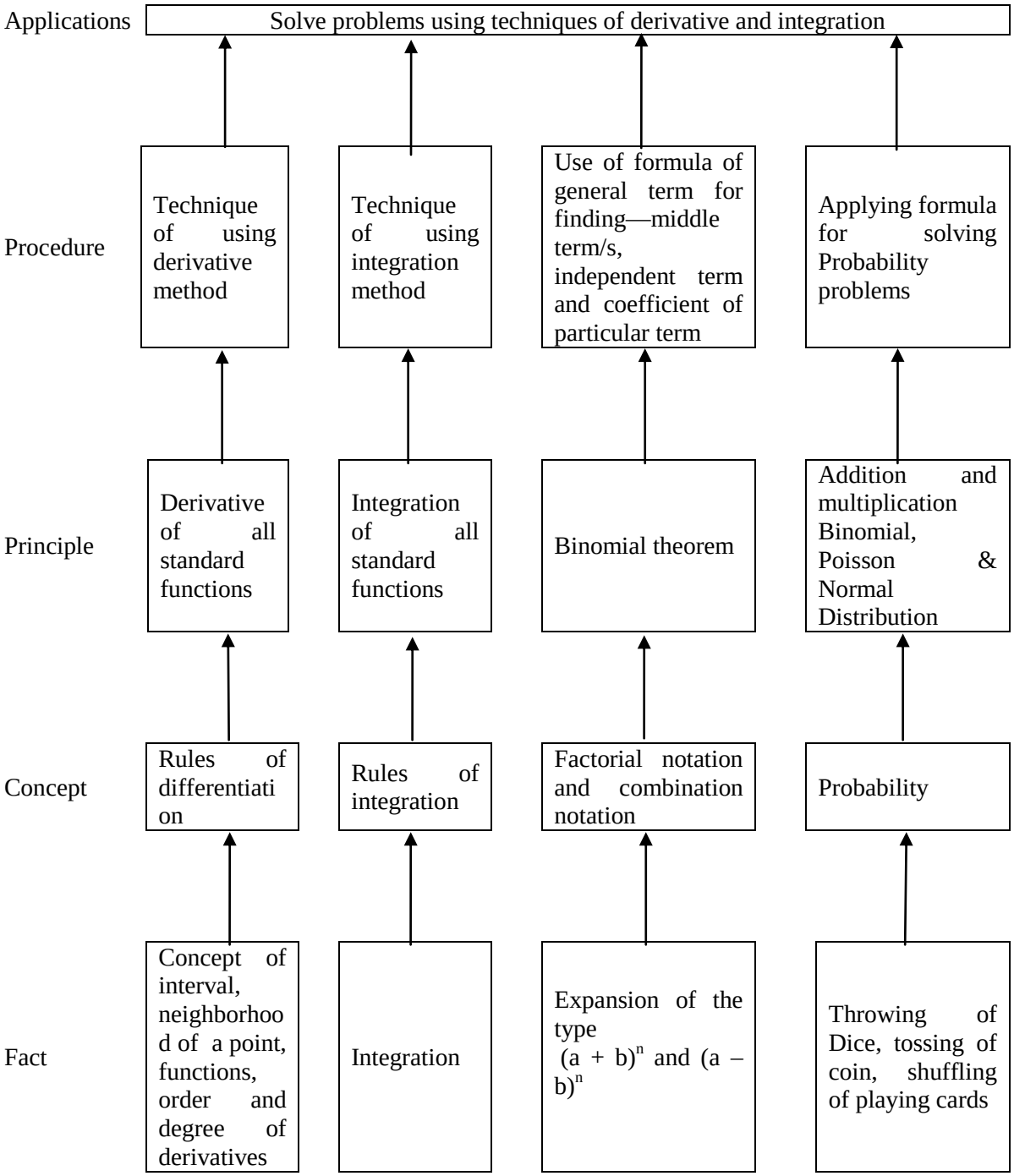
Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	--	03	03	80	20	--	50	150

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:

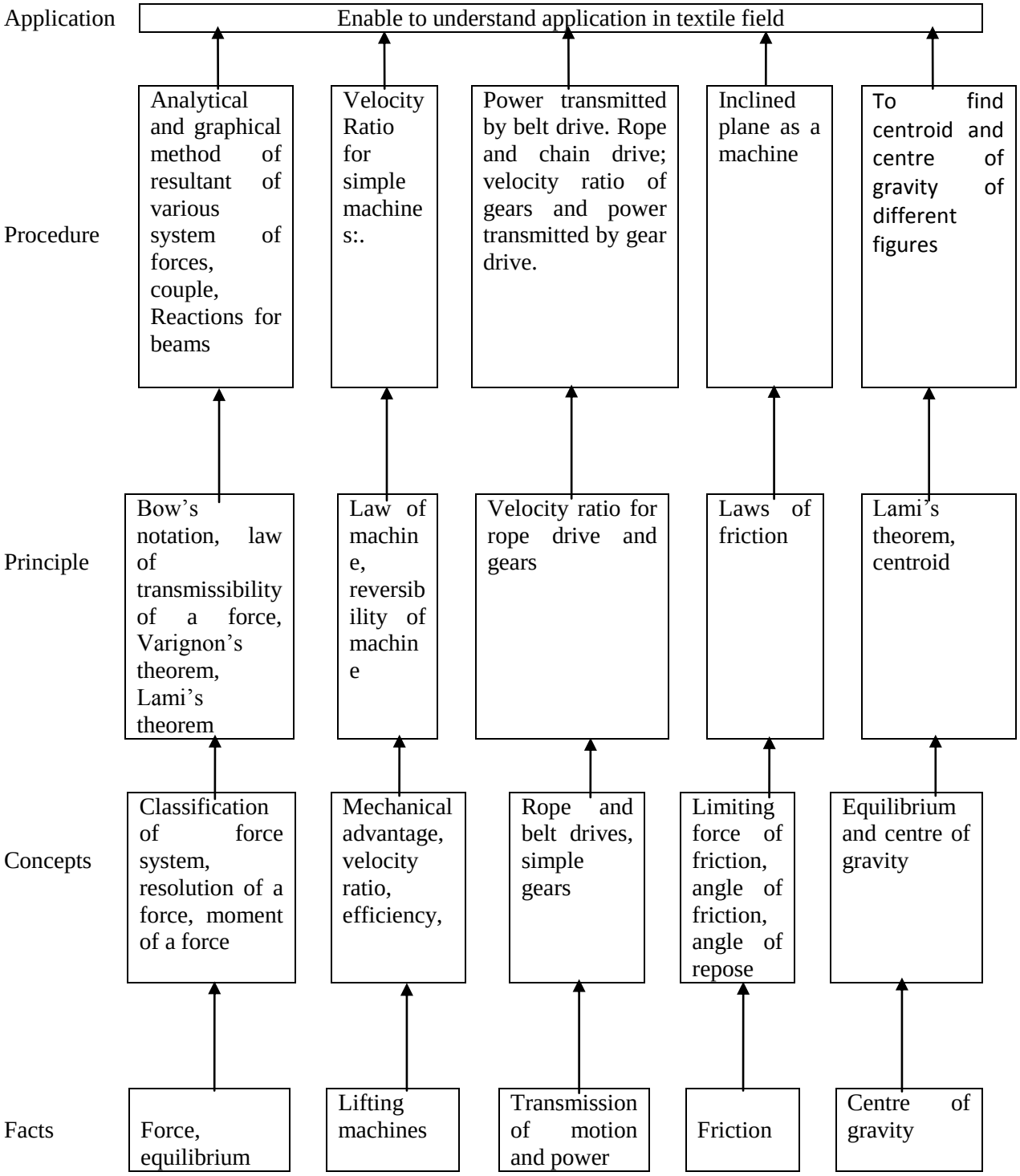
Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
03	03	06	03	80	20	---	50	150

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

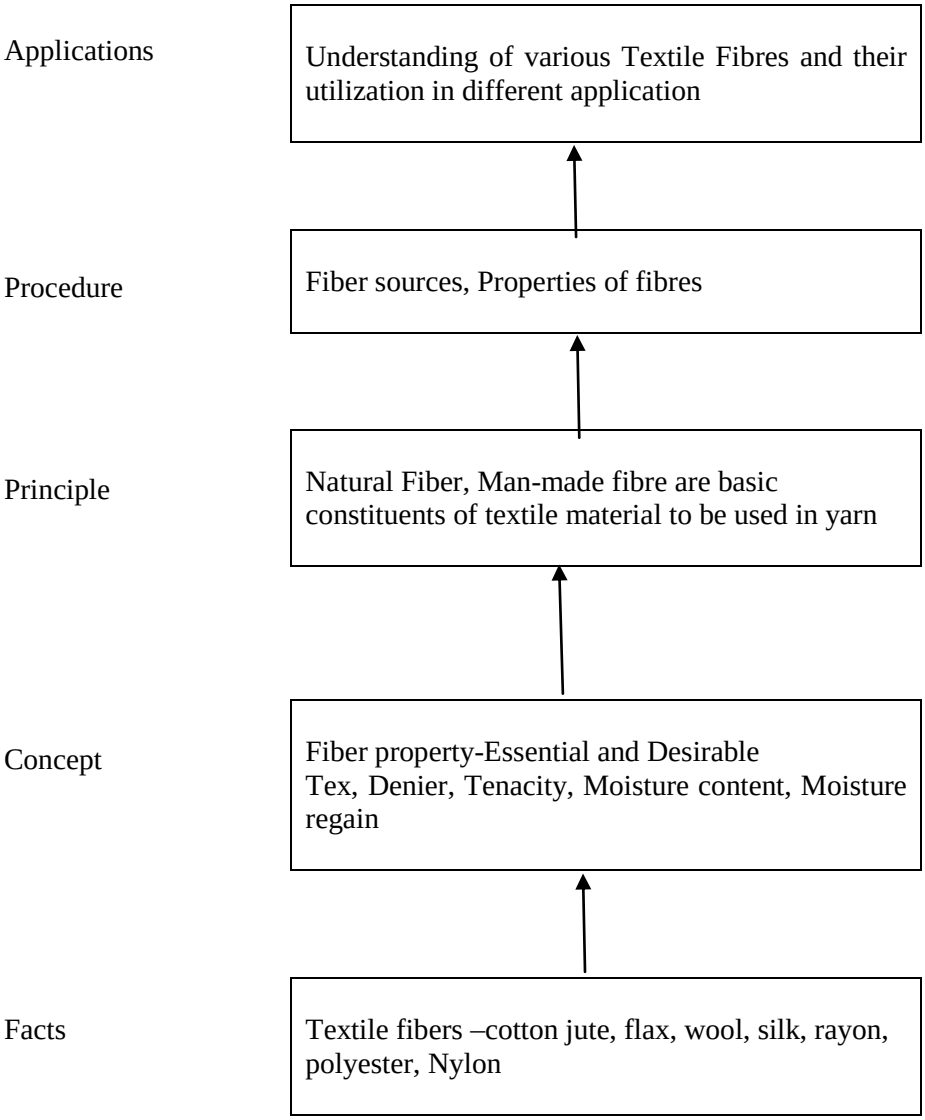
Study of Different class of Textile fibre, Their Chemical composition, Physical and chemical properties; help the students to understand various Natural and Man-made fibres, Also student will know the utility of different Textile fibers.

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

DKT DEPARTMENT

SIMMT, SASMIRA

12.00 NOON, 09TH SEPTEMBER, 2015

VENUE: SASMIRA

TEACHING SCHEME

AND

EXAMINATION SCHEME

III & IV SEMESTER

SYLLABUS

DKT 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 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 KNITTING TECHNOLOGY (DKT)

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	06	--	16	14	30	120	225	480	175	--	1000
3	Applied Technology	07	--	08	05	13	60	100	240	100	--	500
4	Diversified Technology	04	--	06	11	17	40	175	160	125	--	500
5	Management Courses	--	--	--	--	--	--	--	--	--	--	--
	TOTAL			**30**	**30**	**60**	**220**	**500**	**880**	**400**	**--**	**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. * = Non credit subject

DIPLOMA IN KNITTING TECHNOLOGY (DKT)

LEVEL WISE 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 KNITTING TECHNOLOGY (DKT)

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
				L/ TU	P	CR	Progressive		Final exam			
							Test	TW	TH	PR	OR	
CTK 142302	Basics of Weft Knitting	C	Nil	2/1	2	5	20	50	80	--	---	150
CTK 142303	Basics of Warp Knitting	C	Nil	2/1	2	5	20	50	80	--	---	150
CTK 142304	Spinning Preparatory Processes	C	Nil	3	2	5	20	50	80	50	---	200
CTK 142403	Weft Knitting Jacquard Technology	C	CTK 142302	2	3	5	20	25	80	50	---	175
CTK 142404	Tricot Warp Knitting	C	CTK 142303	2	3	5	20	25	80	50	--	175
CTK 142405	Yarn Manufacturing Technology	C	CTK 142304	2/1	2	5	20	25	80	25	--	150
	TOTAL			**16**	**14**	**30**	**120**	**225**	**480**	**175**	--	**1000**

DIPLOMA IN KNITTING TECHNOLOGY (DKT)

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 Texting of Textiles - I	C	Nil	3	3	6	20	50	80	50	---	200
ATN 143306	Industrial Visits*	C	Nil	---	2*	---	---	---	---	---	---	---
ATN 143307	Computer Applications*	C	Nil	---	2*	---	---	---	---	---	---	---
ATC 143401	Physical Testing of Textiles - II	C	ATC 143301	3	2	5	20	50	80	50	---	200
ATC 143402	General Engineering	C	Nil	2	--	2	20	---	80	---	---	100
ATN 143408	Social & Environmental Awareness*	C	Nil	---	2*	---	---	---	---	---	---	---
ATN 143409	Industrial Visits*	C	Nil	---	2*	---	---	---	---	---	---	---
	TOTAL			**8**	**5**	**13**	**60**	**100**	**240**	**100**	--	**500**

DIPLOMA IN KNITTING TECHNOLOGY (DKT)

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	
DTK 144305	Fundamentals of Chemical Processing	C	Nil	3	3	6	20	50	80	50	--	200
DTK 144308	Textile Color and Design	C	Nil	--	3	3	---	50	---	50	--	100
DTK 144406	Weaving Preparatory Processes	C	Nil	2/1	2	5	20	25	80	25	--	150
DTK 144407	Fashion Illustration	C	Nil	---	3	3	---	50	---	---	---	50
	TOTAL			**6**	**11**	**17**	**40**	**175**	**160**	**125**	--	**500**

DIPLOMA IN KNITTING TECHNOLOGY (DKT)

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 KNITTING TECHNOLOGY (DKT)

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	08	--	15	15	30	100	300	400	200	---	1000
Semester-4	06	09	--	15	15	30	120	200	480	200	---	1000
TOTAL	**11**	**17**	**--**	**30**	**30**	**60**	**220**	**500**	**880**	**400**	**---**	**2000**

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

TEACHING AND EXAMINATION SCHEME

DIPLOMA IN KNITTING TECHNOLOGY
(DKT)

SEMESTER-III

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	
ATC 143301	Physical Texting of Textiles - I	C	Nil	3	3	6	20	50	80	50	---	200
CTK 142302	Basics of Weft Knitting	C	Nil	2/1	2	5	20	50	80	--	---	150
CTK 142303	Basics of Warp Knitting	C	Nil	2/1	2	5	20	50	80	--	---	150
CTK 142304	Spinning Preparatory Processes	C	Nil	3	2	5	20	50	80	50	---	200
DTK 144305	Fundamentals of Chemical Processing	C	Nil	3	3	6	20	50	80	50	--	200
ATN 143306	Industrial Visits*	C	Nil	---	2*	---	---	---	---	---	---	---
ATN 143307	Computer Applications*	C	Nil	---	2*	---	---	---	---	---	---	---
DTK 144308	Textile Color and Design	C	Nil	--	3	3	---	50	---	50	--	100
			TOTAL	15	15	30	100	300	400	200	--	1000

*Non Credit Subject

Course : 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:

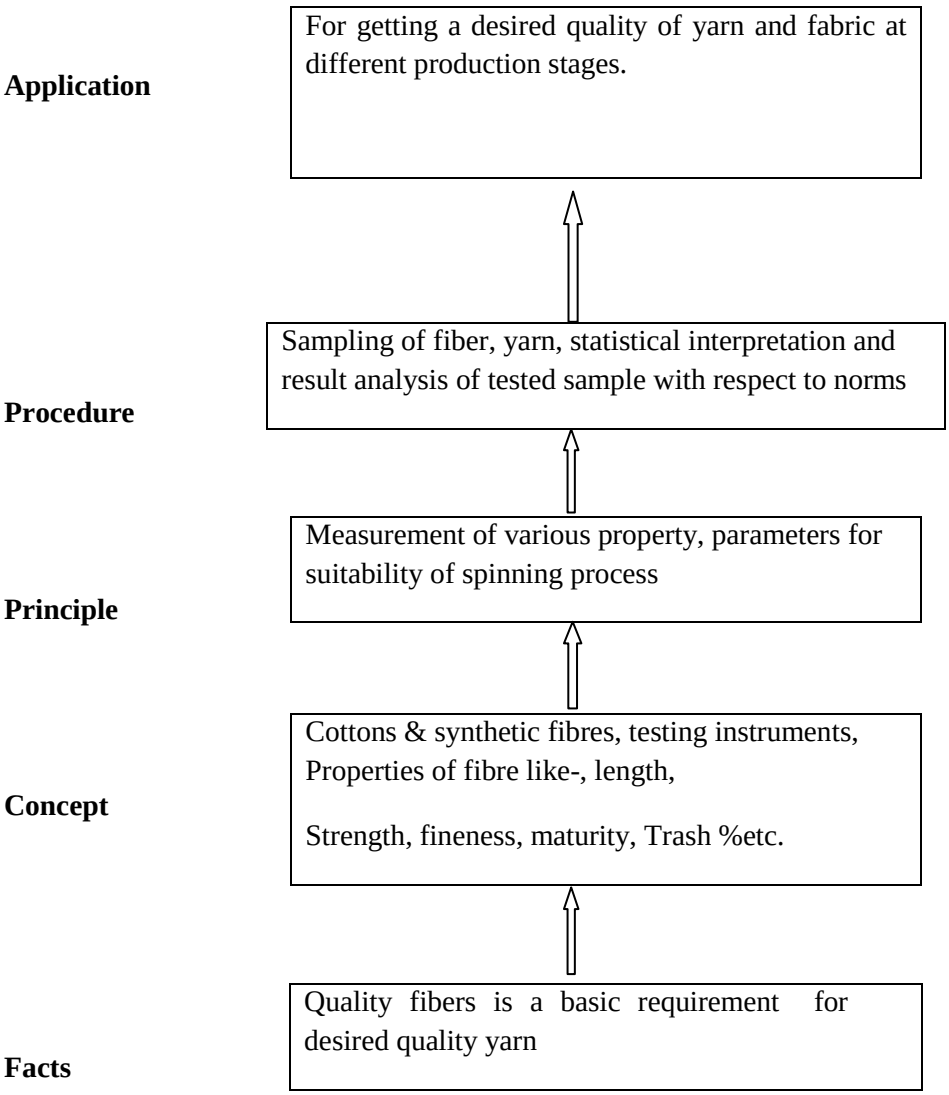
Students will be able to

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 Learning Structure:



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 5.3Span 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 and 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. 8.5 Regain –humidity relations-Hysteresis, absorption and desorption curve 8.6 Factors affecting on Regain of Textile material 8.7 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 and its advantages.	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

Course : DKT

Semester : Third

Subject Title : Basics of Weft Knitting

Subject Code : CTK14302

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
02/01	02	05	03	80	20	--	50	150

RATIONALE

Weft Knitting is a branch of Knitting technology characterized by fundamental concepts, principles, procedures, application and development of weft Knit Machines and Fabric in terms to streamline Knitting Technology knowledge.

This subject develops the basic concepts in the areas relevant to weft knitting. Weft Knitting plays vital role in Manufacturing of knitted fabric. The study of this subject imparts necessary Basic knowledge and skill in the area of Weft Knit Fabric Manufacturing Technology.

General Objectives:

Students will be able to

1. Develop the ability to classify and identify basic Weft Knitting Machine and Fabric.
2. Understand technology to work with Basic Weft knitting Machines.
3. Develop the skill to work with Basic Weft knitting Machines.
4. Understand the technology to Manufacture Basic Weft Knit Fabrics
5. Develop the skill to Manufacture Basic Weft Knit Fabrics
6. Develop the creative skill to Design and Develop innovative Weft Knit Fabrics
7. Develop the skill to identify/ calculate the various machine and fabric parameters required for weft knit fabric
8. Develop Skill to identify and solve the technical problem arise during manufacturing of Weft knit fabric

SECTION-I			
Unit No.	**Contents**	**Hours**	**Marks**
1	**1.1 General Terms and Definitions** **1.1.1 Introduction to different fabric manufacturing methods, Concept of knitting,** 1.1.2 **Classification of Knitting Machines. Different methods of Classification of weft Knitting Machine,**	04	08
2	**2.1 Plain Circular Weft Knitting Machine** **2.1.1 Anatomy of Plain Circular Weft Knitting machine,** **2.1.2 Introduction to Knitting Elements of Plain Circular Weft Knitting machine,** **2.1.3 Knitting Action on Plain Circular weft Knitting Machine,** **2.1.4 Formation of Tuck and Miss stitch** **2.2 Plain (Single) Flat Bed Weft Knitting Machine** **2.2.1Anatomy of Plain Flat Bed Weft Knitting machine,** **2.2.2 Introduction to Knitting Elements of Plain Flat Bed Weft Knitting machine,** **2.2.3 Knitting Cycle on Plain Flat Bed weft Knitting Machine,** 2.2.4 Production Calculation	06	14
3	**3.1 Rib Circular Weft Knitting Machine** **3.1.1 Anatomy of Rib Circular Weft Knitting machine,** **3.1.2 Introduction to Knitting Elements of Rib Circular Weft Knitting machine, Rib gaiting** **3.1.3 Knitting Cycle on Rib Circular weft Knitting Machine,** **3.1.4 Production Calculation** **3.2 Interlock Circular Weft Knitting Machine** **3.2.1 Anatomy of Interlock Circular Weft Knitting machine,** **3.2.2 Introduction to Knitting Elements of Interlock Circular Weft Knitting machine, Interlock Gaiting** **3.2.3 Knitting Cycle on Interlock Circular weft Knitting Machine,** **3.2.4 Production Calculation** **3.3 Double (V) Bed Flat Weft Knitting machine** **3.3.1 Anatomy of Double Bed (V) Flat Weft Knitting machine,** **3.3.2 Introduction to Knitting Elements of V Flat Bed Weft Knitting machine,** **3.3.3 Knitting Cycle on V Flat Bed weft Knitting Machine** **3.3.4 Production Calculation**	08	18
	TOTAL	18	40

SECTION-II			
Unit No.	**Contents**	**Hours**	**Marks**
4	**4.1 General Terms and Definitions** **4.1.1 General fabric Classification, Concept of knitting and Knitted fabric, Comparison of Woven and Knitted fabrics,** Comparison between warp and weft knitted fabrics. 4.1.2 **Weft knitting and their classification. Anatomy of** Knitted Loop, Open loop, closed loop, 4.1.3 **Introduction to General terms used for weft knit Fabric** like , Wale, Course, Stitch Density, Fabric Tightness, Technical face, Technical Back, Knit Stitch, Tuck Stitch, Miss Stitch, etc.	04	08
5	**5.1 Raw materials for weft knitting** 5.1.1 Staple Fiber yarns, Modified yarns, Continuous Filament, textured Yarn, etc 5.1.2 Unconventional fibers and yarns used in weft knitting, 5.1.3 yarn properties required for weft knitting, Influence of yarn variables on weft knitting	08	18
6	**6.1 Fabric Structure** 6.1.1 Introduction to various Standard Plain Fabric Structure using Knit, Tuck and Miss stitches, Needle Arrangement, Cam Arrangement, etc 6.1.2 Introduction to various Standard Rib Fabric Structure using Knit, Tuck and Miss stitches, Needle Arrangement, Cam Arrangement, etc 6.1.3 Introduction to various Standard Interlock Fabric Structure using Knit, Tuck and Miss stitches, Needle Arrangement, Cam Arrangement, etc **6.2 Calculation** 6.2.1 Calculation of Various plain Circular / Flat Weft Knitted Fabric, Machine and Process Parameters based on yarn count 6.2.2 Calculation of Various Circular / Double bed Rib Weft Knitted Fabric , Machine and Process Parameters based on yarn count 6.2.3 Calculation of Various Circular / Double bed Interlock Weft Knitted Fabric , Machine and Process Parameters based on yarn count	06	14
	TOTAL	18	40

Assignment: At least One Assignment per Unit should be given

Practical:

Practical shall be based on mechanical aspect of the Knitting Machine and Fabric Design And Development (Analysis of Different types of Weft knit Fabric covering the above Curricula)

Course : DKT

Semester : Third

Subject Title : Basics of Warp Knitting

Subject Code : CTK 142303

Teaching and Examination Scheme:

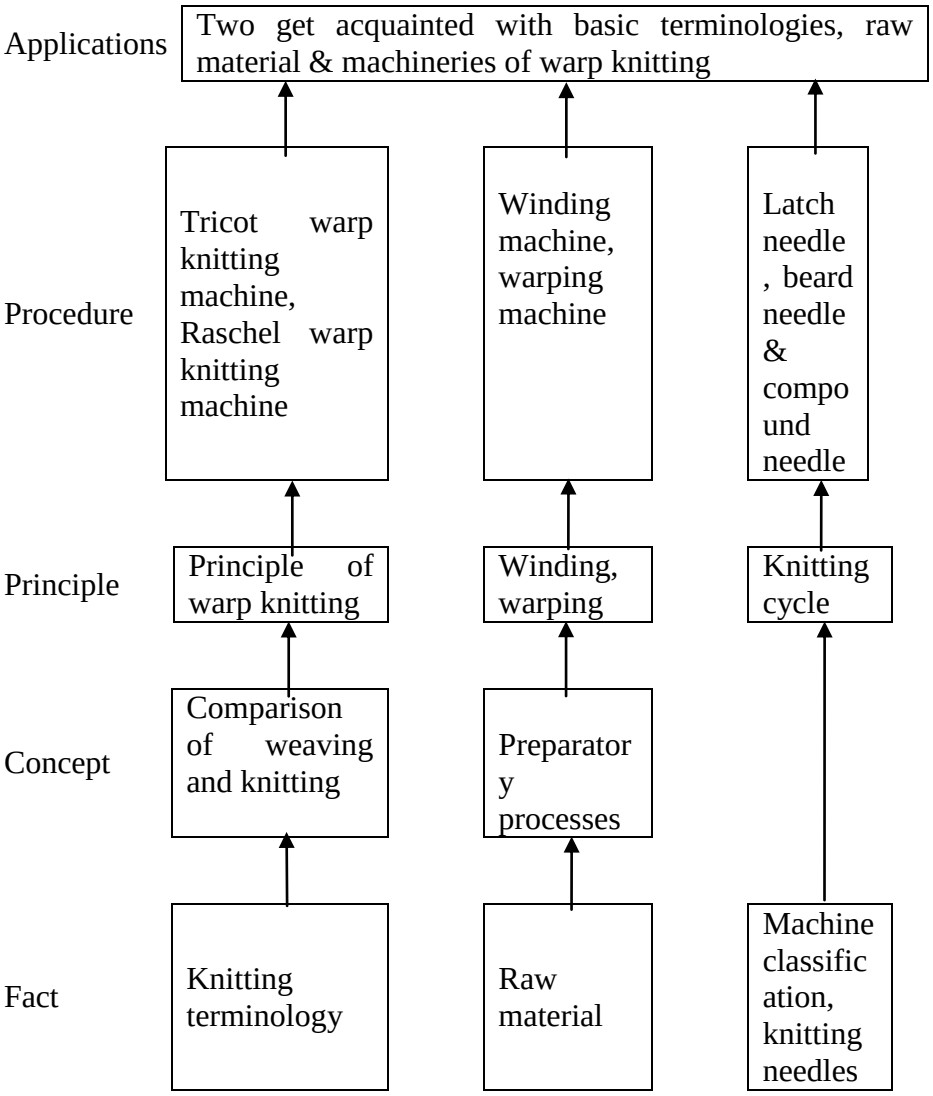
Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
02/01	02	05	03	80	20	50	50	200

RATIONALE

Warp Knitting is a branch of Knitting technology characterized by fundamental concepts, principles, procedures, application and development of warp Knit Machines and Fabric in terms to streamline Knitting Technology knowledge.

This subject develops the basic concepts in the areas relevant to warp knitting. Warp Knitting plays vital role in Manufacturing of knitted fabric. The study of this subject imparts necessary Basic knowledge and skill in the area of Warp Knit Fabric Manufacturing Technology.

Basics of Warp Knitting Learning Structure:



Basics of Warp Knitting Theory:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**General Terms and Definitions:** **1.1 Definition of knitting, warp knitting and their classification.** 1.2 Stitch, loop, Course, Wale, stitch density,machine gauge 1.3 overlap, underlap, technical face, technical back. 1.4 Open loop, closed loop. 1.5 Lapping movement, rack, quality, run-in ratio.	05	12
2	**2.1 Comparison of Woven and Knitted fabrics.** 2.2 Comparison of warp knitting and weft knitting. 2.3 Knitting needles..	05	12
3	3.1 Stitch formation. 3.2 Warp knitting principal 3.3 Passage of yarn through Tricot and Raschel warp knitting machine. 3.4 Comparison of Tricot and Raschel warp knitting machine.	08	16
	TOTAL	18	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
4	**Raw Material used for Warp Knitting** 4.1 Raw materials for warp knitting influence of yarn variables on warp knitting. 4.2 Modified yarns, staple fiber yarns. 4.3 Unconventional fibers and yarns used in warp knitting. 4.4 Yarn properties required for warp knitting.	05	10
5	**Yarn Preparatory Process:** **Winding** 5.1 Objects of winding in knitting. 5.2 Types of winding machines and their study. 5.3 Major package faults.	06	12
6	**Yarn Preparatory Process: Warping** 6.1 Objects of warping in knitting, types of warping. 6.2 Direct warping machine with advantages and disadvantages. 6.3 Indirect warping machine with advantages and disadvantages.	07	18
	TOTAL	18	40

Basics of Warp Knitting 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	**Comparison of Woven and Knitted fabrics.**
2	Latch needle
3	Beard needle
4	Compound needle.
5	Raw material for warp knitting.
6	Winding machine
7	Direct warping machine
8	Indirect warping machine
9	Tricot warp knitting machine passage
10	Raschel warp knitting machine passage

Group B: Solutions to the Assignments given in class

Assignment Number	Topic
1	Definitions and basic terminology
2	Woven and knitted fabric
3	Warp knitting and weft knitting
4	Knitting needles
5	Various raw material for knitting
6	Winding
7	Warping
8	Tricot warp knitting machine
9	Raschel warp knitting machine
10	Difference between tricot and Raschel warp knitting

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.**

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	Knitting Technology	David J. Spencer	Woodhead publication ltd
2	Warp Knit Engineering	A. Reisfeld	National Knitted Outerwear Association, New York.
3	Warp Knitting Technology	D.F. Paling	Columbine Press Limited
4	An introduction to the stitch formations in warp knitting		Karl Mayer
5	Warp Knitting Production	Dr. S. Raz	Melliand
6	Knitting Technology	Prof. D.B. Ajgaonkar	Universal Publication Corpn, Bombay
7	An Introduction to warp knitting	D.G.B. Thomas	Merrow
8	Fundamentals of warp knitting		Karl Mayer

Course : DKT

Semester : Third

Subject Title : Spinning Preparatory Processes

Subject Code : CTK 142304

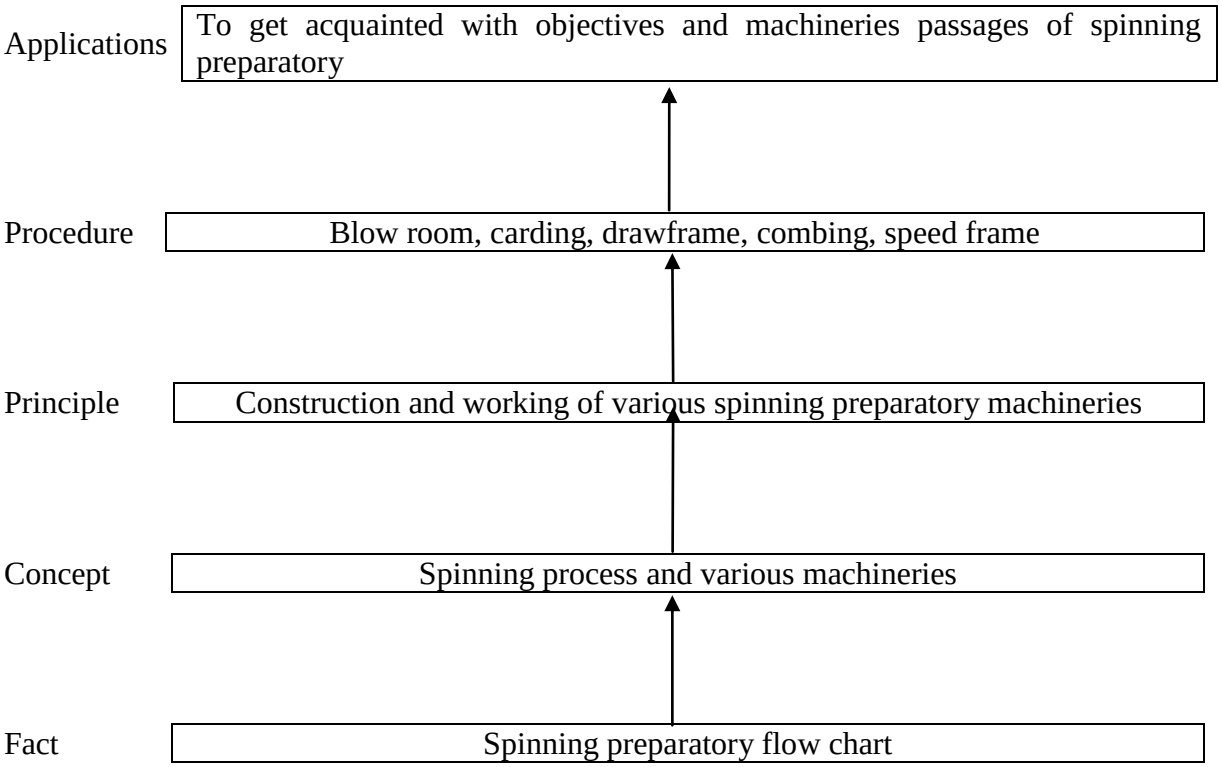
Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH	PR	CR	Paper HRS	TH	Test	Practical	OR	TW	TOTAL
03	02	05	03	80	20	50	---	50	200

Rationale:-

The yarn is used to form fabric by the process of weaving or knitting. This subject intends to equip the students with the concepts, principles and processes of yarn forming. The subject content is framed in such a way so as to train students about the details of the machines, mechanisms involved,production calculations & modern developments. The practicals conducted in this subject are related to the same theory topics for better understanding of subject.

Spinning Preparatory Processes Learning Structure:



Spinning Preparatory Processes Theory:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Blow Room :** 1.1 Objectives of blow room. 1.2 Blow room machinery. 1.3 Importance of lattice and beaters. 1.4 Hopper bale breaker, Porcupine opener, Crighton opener , Step cleaner, Two and three bladed beater, Kirshner beater. 1.5 Condenser and cages. 1.6 Common defects in blow room lap. Blow-room line for synthetic fibers. 1.7 Modern developments in blow room. 1.8 Production calculations.	12	20
2	**Carding :** 2.1 Objectives of carding. 2.2 Passage of cotton through carding machine. Details of important carding organs like feed plate, feed roller, licker in, Mote Knives, Back plate, Cylinder, flats, Front plate Doffer, Doffer comb, Calendar roller, Trumpet. 2.3 Concept of Stripping, grinding and burnishing. 2.4 Setting between different parts of card. Card waste. 2.5 Modern developments in carding. 2.6 Production calculation.	08	12
3	**Draw-frame:** 3.1 Objectives of draw-frame. 3.2 Passage of material through draw frame. 3.3 Roller settings, Roller weightings, draft distribution on conventional 4 over 4 drafting system. 3.4 Various other modern drafting systems. 3.5 Modern developments in Draw frame. 3.6 Production calculations.	04	08
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
4	**Combing preparatory:** 4.1 Objectives. 4.2 Sliver lap Machine with advantages and disadvantages 4.3 Ribbon lap machine with advantages and disadvantages 4.4 Super lap machine with advantages and disadvantages 4.5 Production calculations.	07	12
5	**Comber:** 5.1 Objectives of combing. 5.2 Passage of cotton through comber. 5.3 Combing cycle. 5.4 Factors effecting waste extracted at comber. 5.5 Fractionating efficiency of comber. 5.6 Production calculations.	12	18
6	**Speed frame:** 6.1 Objectives of speed frame. 6.2 Passage of cotton through speed-frame. 6.3 Spindle and flyer assembly. Bobbin leading and flyer leading principles of winding. 6.4 Production calculations.	05	10
	TOTAL	24	40

Spinning Preparatory Processes 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	Passage through Hopper bale breaker
2	Passage through Porcupine opener
3	Passage through Step cleaner
4	Passage through Crighten beater
5	Passage through Kirshner beater
6	Passage through carding machine
7	Passage through drawframe machine
8	Passage through sliver lap machine
9	Passage through ribbon lap machine
10	Passage through super lap former machine
11	Passage through comber
12	Passage through speed frame

Group B: Solutions to the Assignments given in class.

Assignment Number	Topic
1	Blowroom
2	Carding
3	Drawframe
4	Combing preparatory
5	Comber
6	Speedframe

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.**

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	Elements of cotton and blowroom	Prof. A.R. Khare	Sai Book centre, Mumbai
2	Elements of carding and drwaing	Prof. A.R. Khare	Sai Book centre, Mumbai
	Elements of combibg	Prof. A.R. Khare	Sai Book centre, Mumbai
3	Practical guide to blowroom and carding .	Mr. W Klien	Textile Institute
4	Practical guide to combing and drawing .	Mr. W Klien	Textile Institute
5	BTRA Monograph series for Blowroom	BTRA	BTRA
	BTRA Monograph series for Carding	BTRA	BTRA
	Cotton Spinning	Mr. William Tagart	
	Cotton Spinning –	Prof. T.K.Pattabhiram	
	Cotton Spinning	Prof.K.Ganesh Prof. A.R. Garde	

COURSE NAME : DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY

COURSE CODE : DMTT / DKT

SEMESTER : THIRD

SUBJECT TITLE : FUNDAMENTALS OF CHEMICAL PROCESSING

SUBJECT CODE : DTC 144306

TEACHNING SCHEME			EXAMINATION SCHEME						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	TW	TOTAL
02	-	03	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 fibres with 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
	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 : DKT

Semester : Third

Subject Title : Textile Color and Design

Subject Code : DTK144306

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	Paper HRS	TH	Test	Practical	OR	TW	TOTAL
--	3	3	---	---	---	50	--	50	100

Rationale:

To introduce different color theories and schemes

To introduce elements and principles of design

To introduce hue, value and tints, sheds of color

To introduce color and weave effect

To introduce different designs according to end use

Textile Color and Design 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 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

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	Watson's elementary Textile Designs and Colour	Mr. Z. Grosicky	

Course : DKT

Semester : Third

Subject Title : Computer Application

Subject Code : ATN143308

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 related to computer application which can help them in day to day work when they go to industry.

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

TEACHING AND EXAMINATION SCHEME

DIPLOMA IN KNITTING TECHNOLOGY
(DKT)

SEMESTER-IV

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	
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
CTK 142403	Weft Knit Jacquard Technology	C	CTK 142302	2	3	5	20	25	80	50	---	175
CTK 142404	Tricot Warp Knitting	C	CTK 142303	2	3	5	20	25	80	50	--	175
CTK 142405	Yarn Manufacturing Technology	C	CTK 142304	2/1	2	5	20	25	80	25	--	150
DTK 144406	Weaving Preparatory Processes	C	Nil	2	2	4	20	25	80	25	--	150
DTK 144409	Fashion Illustration	C	Nil	---	3	3	---	50	---	---	---	50
ATN 143407	Social & Environmental Awareness*	C	Nil	---	2*	---	---	---	---	---	---	---
ATN 143408	Industrial Visits*	C	Nil	---	2*	---	---	---	---	---	---	---
	TOTAL			15	15	30	120	200	480	200	--	1000

*Non Credit Subject
In-plant training of six weeks will be kept in the summer vacation and the report submissions and viva of the same will be held in V semester.

Course Name : DMTT/DMTC/DKT

Semester : FORTH

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:

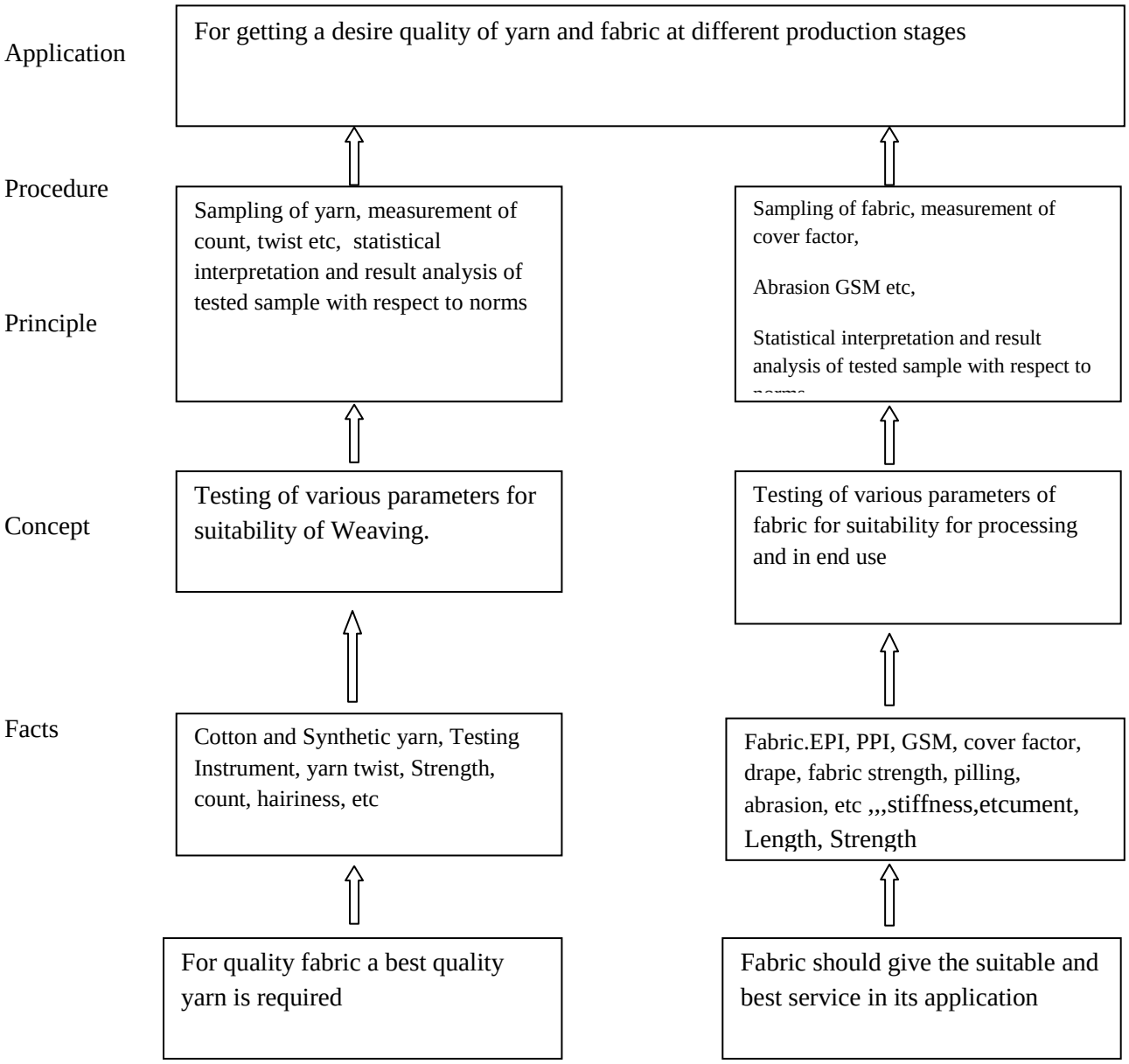
Students will be able to

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 Textile–II Learning Structure:



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.	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, feature and spectrogram analysis. 2.6 Causes and 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 measurement by – a) Shirley Tester, b) optical method & c) Uster Hariness 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 and its testing	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. 7.8 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

Course : DMTT/DMTC/DKT

Semester : FOURTH

Subject Title : General Engineering

Subject Code : ATC143402

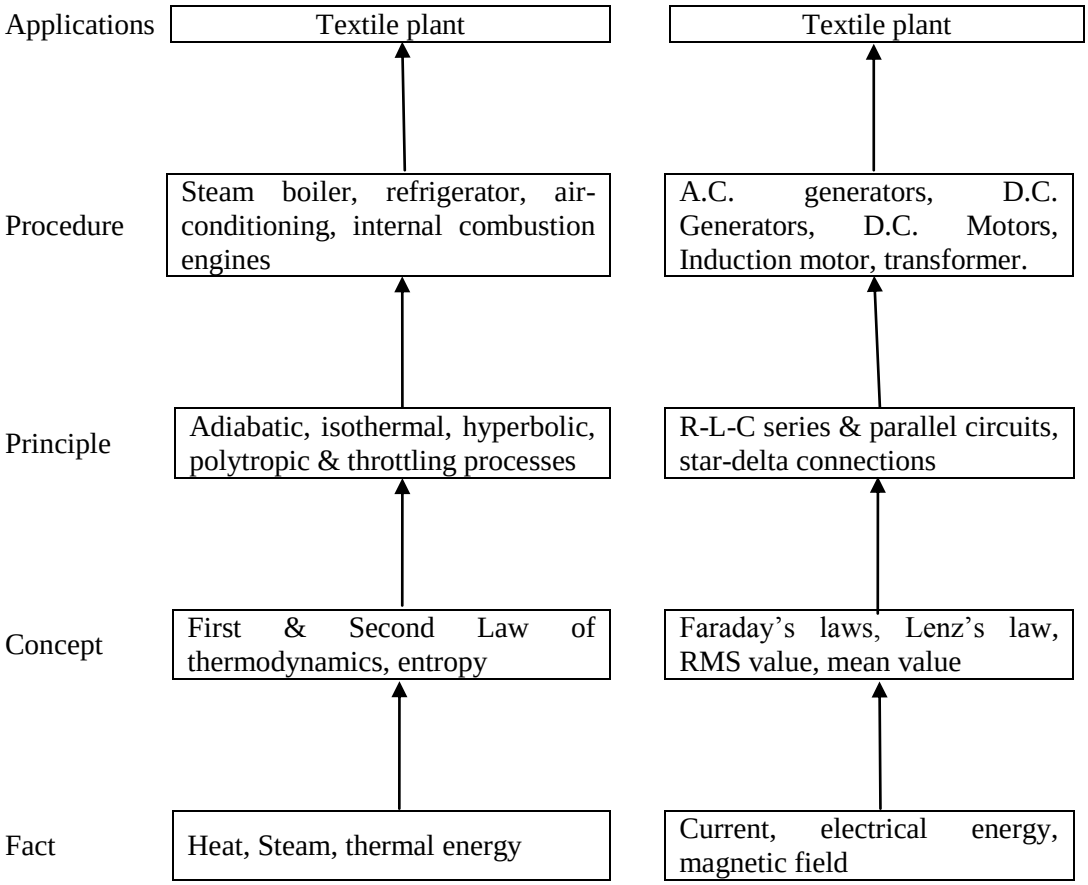
Teaching and Examination Scheme:

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.

General Engineering Learning Structure:



General Engineering Theory:

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.

Course : DKT

Semester : Forth

Subject Title : Weft Knit Jacquard Technology

Subject Code : CTK 142403

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
02	02	04	03	80	20	50	50	200

RATIONALE

Weft Knitting Jacquard is a branch of Knitting technology characterized by fundamental concepts, principles, procedures, application and development of weft Knit Jacquard Mechanism and Fabric in terms to streamline Knitting Technology knowledge.

This subject develops the basic concepts in the areas relevant to weft knit Jacquard Technology. Jacquard Knitting plays vital role in Manufacturing of Weft knitted fabric. The study of this subject imparts necessary Basic knowledge and skill in the area of Weft Knit Jacquard Fabric Manufacturing Technology.

General Objectives:

Students will be able to

9. Develop the ability to classify and identify Weft Knit jacquard Machine and Fabric.
10. Understand technology to work with Weft Knit jacquard Machines.
11. Develop the skill to work with Weft Knit jacquard Machines.
12. Understand the technology to Manufacture Weft Knit jacquard Fabrics
13. Develop the skill to Manufacture Weft Knit jacquard Fabrics
14. Develop the creative skill to Design and Develop innovative Weft Knit jacquard Fabrics
15. Develop the skill to identify/ calculate the various machine and fabric parameters required for Weft Knit jacquard fabric
16. Develop Skill to identify and solve the technical problem arise during Manufacturing of Weft Knit Jacquard Fabric

SECTION-I			
Unit No.	**Contents**	**Hours**	**Marks**
1	1.2 **General Terms and Definitions** **1.1.1 Introduction to Concept of Weft knit Jacquard** 1.1.3 **Different methods of Classification of weft Knit jacquard Selection Devices. Introduction to Terminology used in Weft knit jacquard technology** 1.1.4 **Study of manual Patterning Technique**	03	08
2	**Mechanical Type Pattern Selection Devices on Weft Knit Machine** **2.1 Pattern wheel Jacquard Selection Device** **2.1.1 Introduction to Pattern Wheel Type Selection Device** **2.1.2 Anatomy of Pattern Wheel type Selection Device,** **2.1.3 Principle Involved in Pattern Wheel type Selection Device** **2.1.4 Working of Pattern Wheel type Selection Device** **2.2 Pattern Drum Jacquard Selection Device** **2.2.1 Introduction to Pattern Drum type Selection Device** **2.2.2 Anatomy of Pattern Drum type Selection Device,** **2.2.3 Principle Involved in Pattern Drum type Selection Device** **2.2.4 Working of Pattern Drum type Selection Device** **2.3 Pattern Comb Jacquard Selection Device** **2.3.1 Introduction to Pattern Comb type Selection Device** **2.3.2 Anatomy of Pattern Comb type Selection Device,** **2.3.3 Principle Involved in Pattern Comb type Selection Device** **2.3.4 Working of Pattern Comb type Selection Device** **2.4 Pattern Disc Jacquard Selection Device** **2.3.1 Introduction to Pattern Disc type Selection Device** **2.3.2 Anatomy of Pattern Disc type Selection Device,** **2.3.3 Principle Involved in Pattern Disc type Selection Device** **2.3.4 Working of Pattern Disc type Selection Device**	8	18
3	**Microprocessor Controlled Pattern Selection Devices on Weft Knit Machine** 3.1 Circular Weft Knitting Machine **3.1.1 Introduction to Microprocessor controlled type Selection Device** **3.1.2 Anatomy of Microprocessor controlled type Selection Device** **3.1.3 Working Principle of Microprocessor controlled type Selection Device** 3.2 Flat Bed Weft Knitting Machine **3.2.1 Introduction to Microprocessor controlled type Selection Device** **3.2.2 Anatomy of Microprocessor controlled type Selection Device** **3.2.3 Working Principle of Microprocessor controlled type Selection Device**	05	14
	TOTAL	16	40

SECTION-II			
Unit No.	Contents	Hours	Marks
4	**4.1 Introduction to Jacquard Fabric Designing and Development** **4.1.1 Scope and Limitation of Jacquard Fabric Structure.** **4.1.2 Study of Parameters to be considered for the Jacquard fabric Design and Development,** **4.1.3 Types of Fabric backing,**	04	10
5	5.1 Design Development on Mechanical Pattern Selection Devices 5.1.1 Development of Design on Hand Operated Normal Flat bed Weft Knitting Machine 5.1.2 Study of Design Development on Pattern Wheel Type Selection Device on Weft Knit machine, Required Calculation for Setting the Design on the Machine 5.1.3 Study of Design Development on Pattern Drum Type Selection Device on Weft Knit machine, Required Calculation for Setting the Design on the Machine 5.1.4 Study of Design Development on Pattern Comb Type Selection Device on Weft Knit machine, Required Calculation for Setting the Design on the Machine 5.1.5 Study of Design Development on Pattern Disc Type Selection Device on Weft Knit machine, Required Calculation for Setting the Design on the Machine	08	20
6	**Microprocessor Controlled Pattern Selection Devices on Weft Knit Machine** 6.1 Circular Weft Knitting Machine **6.1.1 Study of Design Development on Microprocessor controlled type Selection Device on Circular Weft knitting Machine** **6.1.2 Study of Design Development on Microprocessor controlled type Selection Device on Flat bed Weft knitting Machine** 6.2 Flat Bed Weft Knitting Machine **6.2.1 Study of Design Development on Microprocessor controlled type Selection Device on Single and V-Bed Flat Knitting Machine**	04	10
	TOTAL	16	40

Assignment: At least One Assignment per Unit should be given

Practical:

Practical shall be based on mechanical aspect of the Knitting Machine and Fabric Design and Development (Analysis of Different types of Weft knit Jacquard Fabric covering the above Curricula)

Course : DKT

Semester : Fourth

Subject Title : Tricot Warp Knitting

Subject Code : CTK 142404

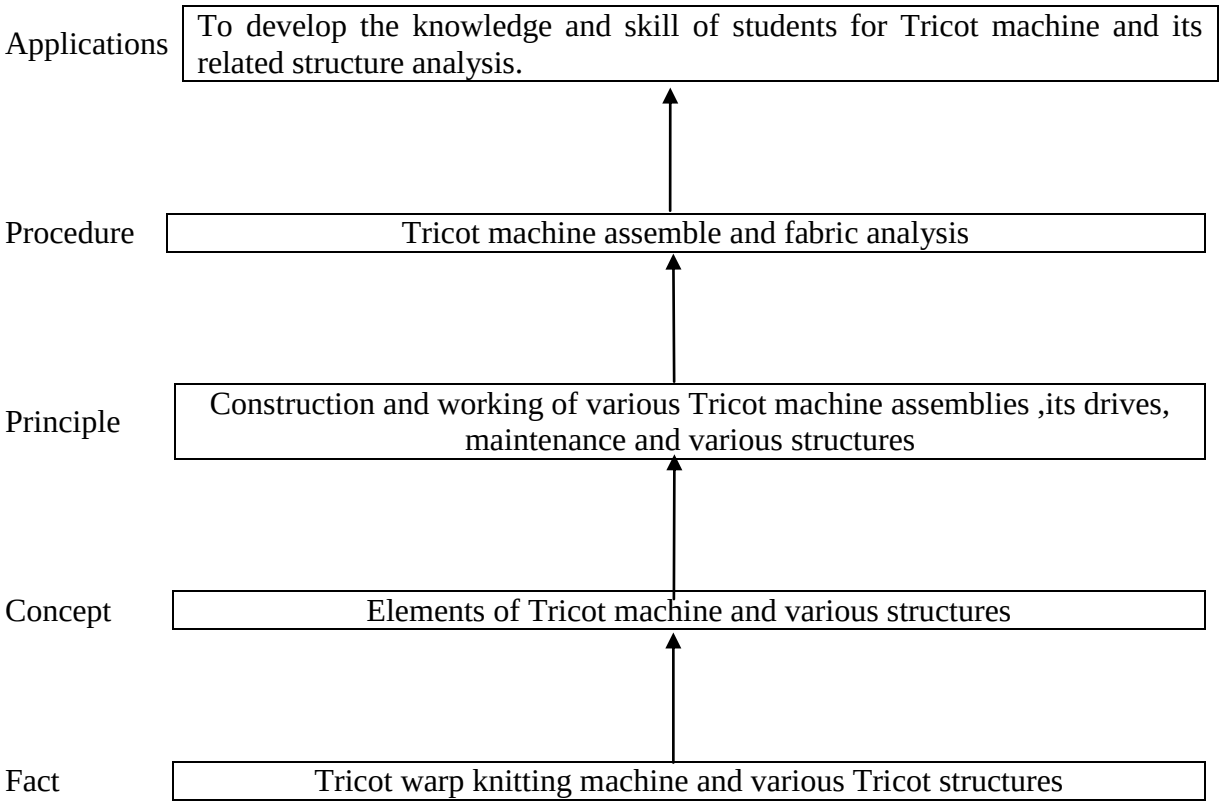
Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
02/01	02	05	03	80	20	50	50	200

RATIONALE

Warp knitting is one of the way of manufacturing of fabric. This subject develops the knowledge and skill in the Tricot warp knitting machine and various tricot structures.

Tricot Warp Knitting Learning Structure:



Tricot Warp Knitting Theory:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Tricot Machine Assemblies:** **1.1 Knitting elements of Tricot warp knitting.** 1.2 Stitch formation and knitting cycle 1.3 Needle bar mechanism, presser bar mechanism, guide bar mechanism, sinker bar mechanism, Let-off and Take-off mechanism of Tricot knitting machines. 1.4 Chain links, pattern wheel/disc.	12	20
2	**2.1 Latest developments in warp knitting machines.** 2.2 Cut pressure bar machines. 2.3 Maintenance of Tricot knitting machines. 2.4 Geometry of warp knitted fabrics. 2.5 Fabric costing.	06	10
3	3.1 Fabric calculations and parameters. 3.2 Run-in calculations for single bar, two bar, three bar and four bar fabrics.	06	10
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
4	4.1 Fabric structures in warp knitting. 4.2 Principles of warp knitting, half-set threading, full-set threading, part-set threading. 4.3 Single bar fabrics-pillar lap, tricot lap, atlas lap.	06	10
5	**Two Bar Fabric:** 5.1 Locknit fabric, stripped locknit fabric, satin fabric, colored check fabric, sharkskin fabric, queen's cord, loop raised fabric. . 5.2 **Part set threading-**Half set net, net with diamond shaped, net with hexagonal openings, net with circular openings, fancy mesh fabrics, curtain net mesh, pique fabric, angel laces.	11	18
6	6.1 Three bar and four bar fabrics:- shirting fabrics, mock-plated fabrics, angel lace, 4-bar all over fabric, 4-bar angel lace fabric.. 6.2 Laid-in fabric:- 2-bar marquisette curtain net. 6.3 Cut presser fabric, shell stitch fabric, spot fabric, elastic scarf stitch.	07	12
	TOTAL	24	40

Tricot Warp Knitting 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	Tricot warp knitting elements.
2	**Tricot knitting cycle.**
3	Needle bar mechanism.
4	Sinker bar mechanism.
5	Presser bar mechanism.
6	Guide bar mechanism.
7	Let off mechanism.
8	Take up mechanism.
9	Analysis of given fabric sample number 1
10	Analysis of given fabric sample number 2
11	Analysis of given fabric sample number 3
12	Analysis of given fabric sample number 4
13	Analysis of given fabric sample number 5
14	Analysis of given fabric sample number 6

Group B: Solutions to the Assignments given in class

Assignment Number	Topic
1	Tricot knitting elements
2	Beard needle knitting cycle
3	Various drive mechanisms of tricot machine
4	Maintenance and fabric costing
5	Cloth geometry
6	Production calculation
7	Single guide bar structure
8	Two guide bar structures
9	Three guide bar structures
10	Cut presser

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.**

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	Knitting Technology	David J. Spencer	Woodhead publication ltd
2	Warp Knit Engineering	A. Reisfeld	National Knitted Outerwear Association, New York.
3	Warp Knitting Technology	D.F. Paling	Columbine Press Limited
4	An introduction to the stitch formations in warp knitting		Karl Mayer
5	Warp Knitting Production	Dr. S. Raz	Melliand
6	Knitting Technology	Prof. D.B. Ajgaonkar	Universal Publication Corpn, Bombay
7	An Introduction to warp knitting	D.G.B. Thomas	Merrow

Course : DKT

Semester : Fourth

Subject Title : Yarn Manufacturing Technology

Subject Code : CTK 142405

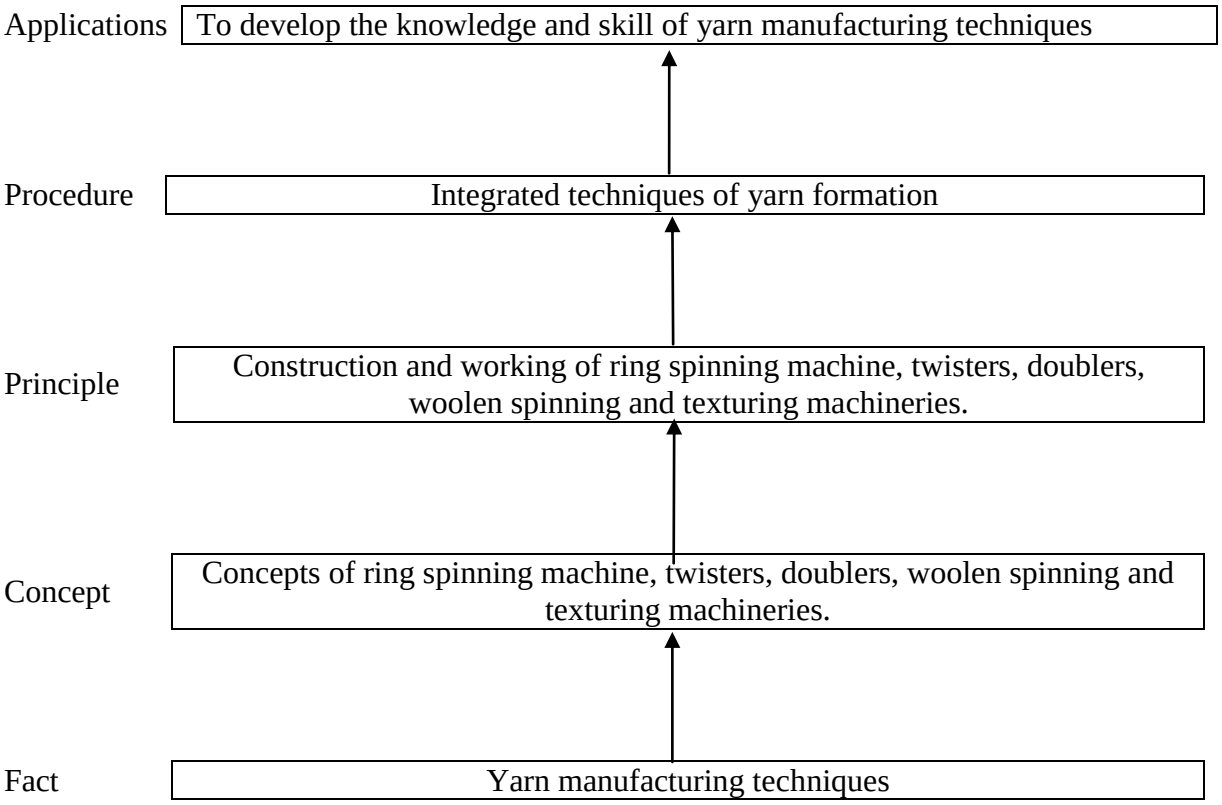
Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH	**PR**	**CR**	**Paper HRS**	**TH**	**Test**	**Practical**	**OR**	**TW**	**TOTAL**
02	**02**	**04**	**03**	**80**	**20**	**50**	**---**	**50**	**200**

Rationale:-

The Textile manufacturing is done in various stages. The subject intends to impart knowledge and skills in area of yarn manufacturing i.e. ring spinning, twisting, doubling, woolen spinning, blending and texturing.

Yarn Manufacturing Technology Learning Structure:



Yarn Manufacturing Technology Theory:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Ring Frame :** 1.9 Object of ring frame. 1.10 Passage of cotton through ring frame. 1.11 Ring and traveler assembly. 1.12 Building mechanism of ring frame. 1.13 Functions of separators, balloon control rings, apron drafting system, top arm drafting system, aprons, spacers. 1.14 Different types of roller weightings, causes of roller slip. 1.15 Production calculations.	12	20
2	**Twisting:** 2.7 Objectives of twisting. 2.8 Study of up-twister and two-for-one twister. 2.9 Calculations related to twist per inch production.	04	08
3	**Doubling:** 3.3 Objectives of doubling. 3.4 Twist directions, balanced and unbalanced yarn. 3.3 Ply yarn, cord yarn, cable yarn, sewing thread, properties of folded yarn. 3.4 Types of doubling-Dry doubling, Wet doubling. 3.5 Fancy doubler. Objectives of fancy doubler. 3.6 Passage of yarn through fancy doubler. 3.7 Various fancy yarns and their methods of production.	08	12
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
4	**Woolen spinning:** 4.5 Difference between woolen and worsted yarn. 4.6 Classification of wool. 4.7 Wool sorting, wool scouring, carbonizing, rag pulling, garneting, woolen carding.	07	12
5	**Blend spinning:** 5.7 Essential properties of synthetic fiber. Objectives of blending. 5.8 Blow room blending and draw frame blending. 5.9 Operational advantages & disadvantages. Processing parameters required for blends and 100% synthetic fibers.	10	16
6	**Texturing:** 6.5 Objectives of texturing. 6.6 Types of texturing yarn. 6.7 False twist texturing, air texturing, stuffer box texturing, knit-de-knit texturing, gear texturing.	07	12
	TOTAL	24	40

Yarn Manufacturing 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:

1	Passage through ring frame machine.
2	Building mechanism of ring frame.
3	Two for one twister.
4	Dry and wet doubling.
5	Woolen and worsted spinning.
6	Blending.
7	False twist texturing.
8	Air texturing.
9	Stuffer box texturing.
10	Knit-de-knit texturing.
11	Gear texturing.

Group B: Solutions to the Assignments given in class.

Assignment Number	Topic
1	Ring frame
2	Twisting
3	Doubling
4	Woollen and worsted spinning
5	blending
6	Texturing

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.**

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	Elements of ring frame and doubling	Prof. A.R. Khare	Sai Book centre, Mumbai
2	Practical guide ring spinning	Mr. W Klien	Textile Institute
3	A Guide to Crimping/Texturing Technology	Dr. M.V.S.Rao & mr. A.B. Talele	Mantra,Surat
4	Spinning of manmade and blends on cotton system	K.R.Salhotra	The textile association india
5	Essential elements of practical Cotton Spinning	Prof. T.K.Pattabhiram	Somaiya publication pvt ltd.
6	Cotton Spinning	Mr. William Tagart	
7	Cotton Spinning	Prof.K.Ganesh Prof. A.R. Garde	
8	Woollen Spinning -	Mr.Allan Brearly	
9	Woollen Handbook.		

Course : DKT

Semester : Fourth

Subject Title : Weaving Preparatory Processes

Subject Code : DTK 144406

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	Paper HRS	TH	Test	Practical	OR	TW	TOTAL
02	02	04	03	80	20	25	---	25	150

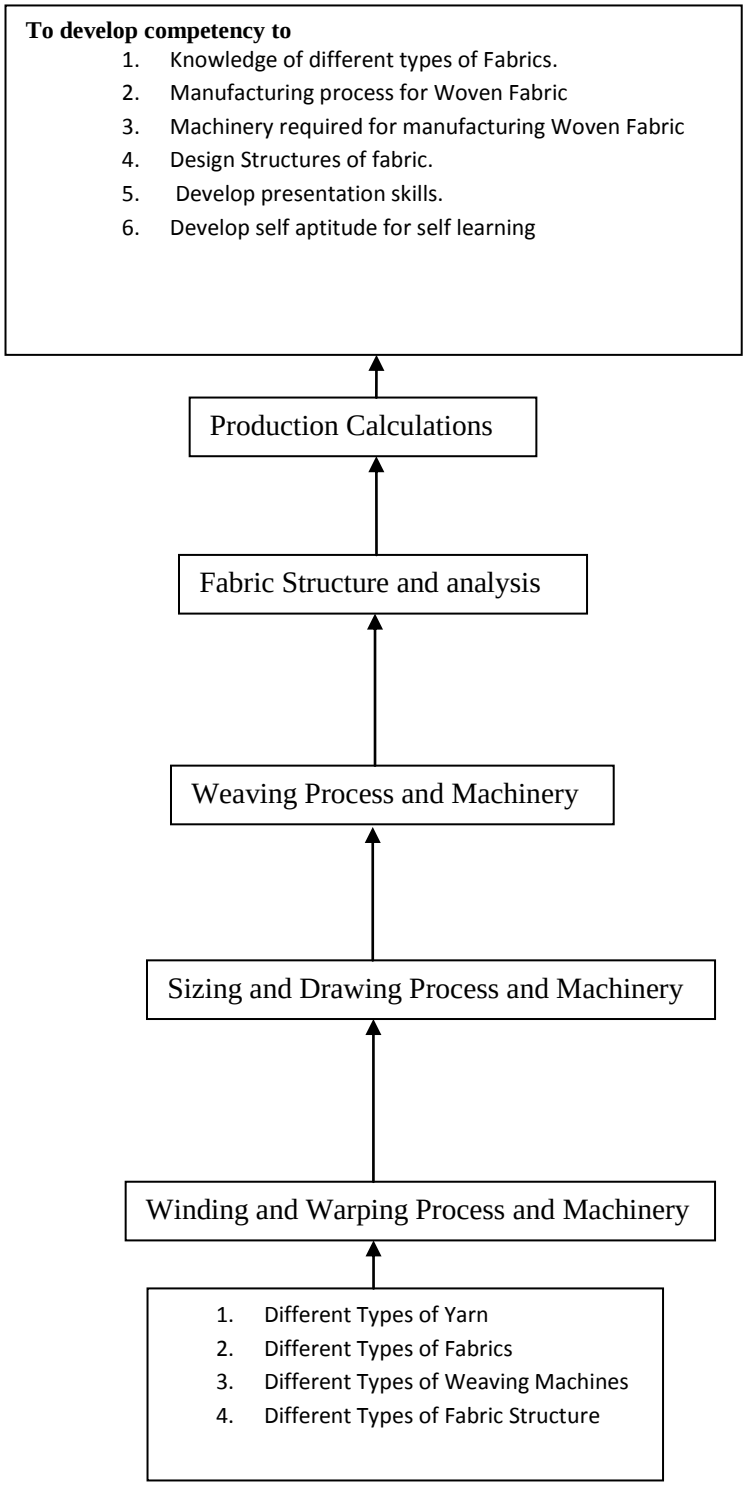
Rationale:-

To introduce various aspects of weaving preparatory

To introduce Winding

To introduce Warping

To introduce Sizing


To develop competency to
1. Knowledge of different types of Fabrics.
2. Manufacturing process for Woven Fabric
3. Machinery required for manufacturing Woven Fabric
4. Design Structures of fabric.
5. Develop presentation skills.
6. Develop self aptitude for self learning
Production Calculations
Fabric Structure and analysis
Weaving Process and Machinery
Sizing and Drawing Process and Machinery
Winding and Warping Process and Machinery
1. Different Types of Yarn
2. Different Types of Fabrics
3. Different Types of Weaving Machines
4. Different Types of Fabric Structure

Weaving Preparatory Processes Theory:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	1.1 Introduction to fabric Manufacturing. Flow Chart of the process. 1.2 **Winding:** 1.2.1 Objects of winding , classification of winding machines and their study 1.2.2 Introduction to different winding packages. 1.2.3 Types of traverse. Types of yarn guide. 1.2.4 Different tensioning devices and their working. 1.2.5 Types of clearer/slub catcher and their working. 1.2.6 Introduction to knotter and air splicer, package faults. 1.2.7 Features of modern winding machine.	10	16
2	**Warping:** 2.1 Objective of warping, classification of warping machines and their study. 2.2 Introduction to different types of creels, headstocks. 2.3 Difference between sectional warping and beam warping. 2.4 Features of modern beam and sectional warping machine. 2.5 Faults/defects control. 2.6 Production calculations.	10	16
3	**Pirn Winding:** 3.1 Objects of pirn winding, 3.2 Passage of yarn through pirn winding machine, 3.3 Build of the pirn.	04	08
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Sizing:** 1.1 Object of sizing, 1.2 Passage of warp on single cylinder sizing machine, 1.3 Passage of yarn on multi cylinder sizing machine.	04	08
2	2.1 Different types of creels, 2.2 Different types of saw box,	06	09
3	3.1 Arrangement of Cylinders, 3.2 Leasing operations, 3.3 Drags rollers, 3.4 Expanding comb.	04	06
4	4.1 Sizing Ingredients, 4.2 Size Mix, Size mixing equipments	06	09
5	5.1 Production Calculations, 5.2 Modern developments in sizing	02	04
6	Drawing in	02	04
	TOTAL	24	40

Weaving Preparatory Processes 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	Different types of yarn packages
2	Passage of yarn on cone winding machine
3	Different types of tensioning devices
4	Different types of slub catchers
5	Passage of warp on beam warping machine
6	Passage of warp on sectional warping machine
7	Passage of warp on two cylinder sizing machine
8	Passage of warp on multi cylinder sizing machine
9	Different types of creels
10	Different types of saw box
11	Different types of drying
12	Different types of expanding comb
13	Leasing operation
	Passage of weft on pirn winding machine

Group B: Solutions to Assignments given in class.

Assignment Number	Topic
1	Features of modern winding machine
2	Features of modern warping machine
3	Features of modern pirn winding machine
4	Features of modern sizing machine

REFERENCES:-

Sr. No.	Name of Book	Author
2	Yarn Preparation Volume I & II	R. Sengupta
3	Sizing	D. B. Ajgoankar, V. R. Wadekar, M. K. Talukdar
4	Yarn & fabric conversion	P. R. Lord, M. H. Mohamed
5	Cotton yarn Weaving	R.N. Kanoongo and P.R.Roy
6	Yarn & fabric conversion	Mr. J.B. Smith
7	BTRA monograph on winding, warping & sizing	
8	Weaving calculation	R. Sengupta

Course : DKT

Semester : Four

Subject Title : Fashion Illustration

Subject Code : DTK 144409

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	Paper HRS	TH	Test	Practical	OR	TW	TOTAL
--	3	3	---	---	---	---	--	50	50

Rationale:

To Introduce sketching of mechanical croquie, flashing, fashion croquie

To introduce different body parts

To introduce different garment parts

To introduce fashion accessories

To introduce story board, sketch board, portfolio

Fashion Illustration Practical:

list of Experiments:

1	Drawing Heads
2	Drawing Hands
3	Drawing Feet's
4	Drawing Nose, Lips, Eyes
5	Study of basic mechanical croquie
6	Fleshing techniques
7	Moving poses, Different Poses
8	Nude poses
9	Dress up poses
10	Guidelines for sketching of gathers, pleats, folds, ruffles etc.
11	Rendering fabric swatches and applying on garments
12	Designing seasonal garments
13	Designing of occasional garments
14	Library formation of necklines, collars and lapels, sleeves, trousers, skirts and other fashion details
15	Sketching and study of various accessories – Headgear, Footwear, Hand bags, Bow, Belts
16	Working on them – Story book, sketch book
17	Preparing Portfolio

Assignments

Assignment Number	Topic
1	Study of different events in fashion
2	Study of different fashion designers
3	Study of different fashion in different countries
4	Study of different fashion trends
5	Study of fashion forecasting

Course : DKT

Semester : FOURTH

Subject Title : Social and Environmental Awareness

Subject Code : ATN143407

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 and different area textile industries.

BOARD OF STUDIES MEETING

DKT DEPARTMENT

SIMMT, SASMIRA

11.30 a.m., 27TH July, 2016

VENUE: SASMIRA

TEACHING SCHEME

AND

EXAMINATION SCHEME

V & VI SEMESTER

SYLLABUS

DKT DEPARTMENT

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

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

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 KNITTING TECHNOLOGY (DKT)

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
							Progressive		Final exam			
				L/TU	P	Total	Test	TW	TH	PR	OR	
1	Science & Humanities	--	--	--	--	--	--	--	--	--	--	--
2	Core Technology	04	--	11	11	22	80	200	320	150	--	750
3	Applied Technology	06	--	06	06	12	40	50	160	150	--	400
4	Diversified Technology	05	--	08	15	23	60	250	240	200	--	450
5	Management Courses	01	--	03	--	03	20	--	80	--	--	100
	TOTAL			**28**	**32**	**60**	**200**	**500**	**800**	**500**	**--**	**2000**

Notation:

23. L = Lecture
24. TU = Tutorial
25. P = Practical
26. Test = Sessional Test
27. TW = Term Work
28. TH = Theory paper
29. PR = Practical Exam
30. OR = Oral Exam
31. C = Compulsory subject
32. O = Optional subject
33. * = Non credit subject

DIPLOMA IN KNITTING TECHNOLOGY (DKT)

LEVEL WISE 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 KNITTING TECHNOLOGY (DKT)

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	
CTK 142502	Raschel Warp Knitting Technology	C	CTK 142404	2/1	3	6	20	50	80	50	---	200
CTK 142503	Seamless Knitting Technology	C	CTK 142403	2	2	4	20	50	80	--	---	150
CTK 142604	Advance Knitting Technology	C	CTK 142502 -03	3	3	6	20	50	80	50	---	200
CTK 142604	Advance Spinning Technology	C	Nil	3	3	6	20	50	80	50	---	200
	TOTAL			**11**	**11**	**22**	**80**	**200**	**320**	**150**	--	**750**

DIPLOMA IN KNITTING TECHNOLOGY (DKT)

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
							Progressive		Final exam			
				L/ TU	P	CR	Test	TW	TH	PR	OR	
ATC 143501	Technical Textiles	C	Nil	3	--	3	20	--	80	--	---	100
ATK 143506	Seminar and Implant Training	C	Nil	---	3	3	---	50	---	---	50	100
ATN 143507	Industrial Visits*	C	Nil	---	2*	---	---	---	---	---	---	---
ATC 143602	Textile Mill Planning Management	C	Nil	3	---	3	20	---	80	---	---	100
ATK 143606	Project	C	Nil	---	3	3	---	50	---	---	50	100
ATN 143409	Industrial Visits*	C	Nil	---	2*	---	---	---	---	---	---	---
	TOTAL			**6**	**6**	**12**	**40**	**100**	**160**	**---**	**100**	**400**

DIPLOMA IN KNITTING TECHNOLOGY (DKT)

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	O R	
DTK 144504	Principles of Weaving	C	DTK 144406	2/1	3	6	20	50	80	---	--	150
DTK 144505	Garment Manufactu ring Technology	C	Nil	2	3	5	20	50	80	50	--	200
DTC 144508-11	Elective Subject*	C	Nil	---	3	3	---	50	---	---	50	100
DTK 144605	Fabric Structure	C	DTK 144503	3	3	6	20	50	80	50	--	200
DTC 144608-11	Elective Subject**	C	Nil	---	3	3	---	50	---	---	50	100
	TOTAL			**8**	**15**	**23**	**60**	**250**	**240**	**100**	**100**	**750**

*Process Control in Textile Processing, Man-made Fiber Manufacturing, Knitt Product Development, Entrepreneurship development.
**Computer Colour Matching, Narrow Fabric Manufacturing Technology, Production Planning and Control, Electronics in Textile

DIPLOMA IN KNITTING TECHNOLOGY (DKT)

LEVEL WISE COURSE STRUCTURE AND TEACHING& EXAMINATION SCHEME

(SCHEME – 2)

SEMESTER V AND SEMESTER VI

Level - 5 MANAGEMENT COURSES

Sub. 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 KNITTING TECHNOLOGY (DKT)

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	08	--	13	17	30	100	250	400	200	50	1000
Semester-6	05	08	--	15	15	30	100	250	400	150	100	1000
TOTAL	**10**	**16**	**--**	**28**	**32**	**60**	**200**	**500**	**800**	**250**	**150**	**2000**

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

TEACHING AND EXAMINATION SCHEME

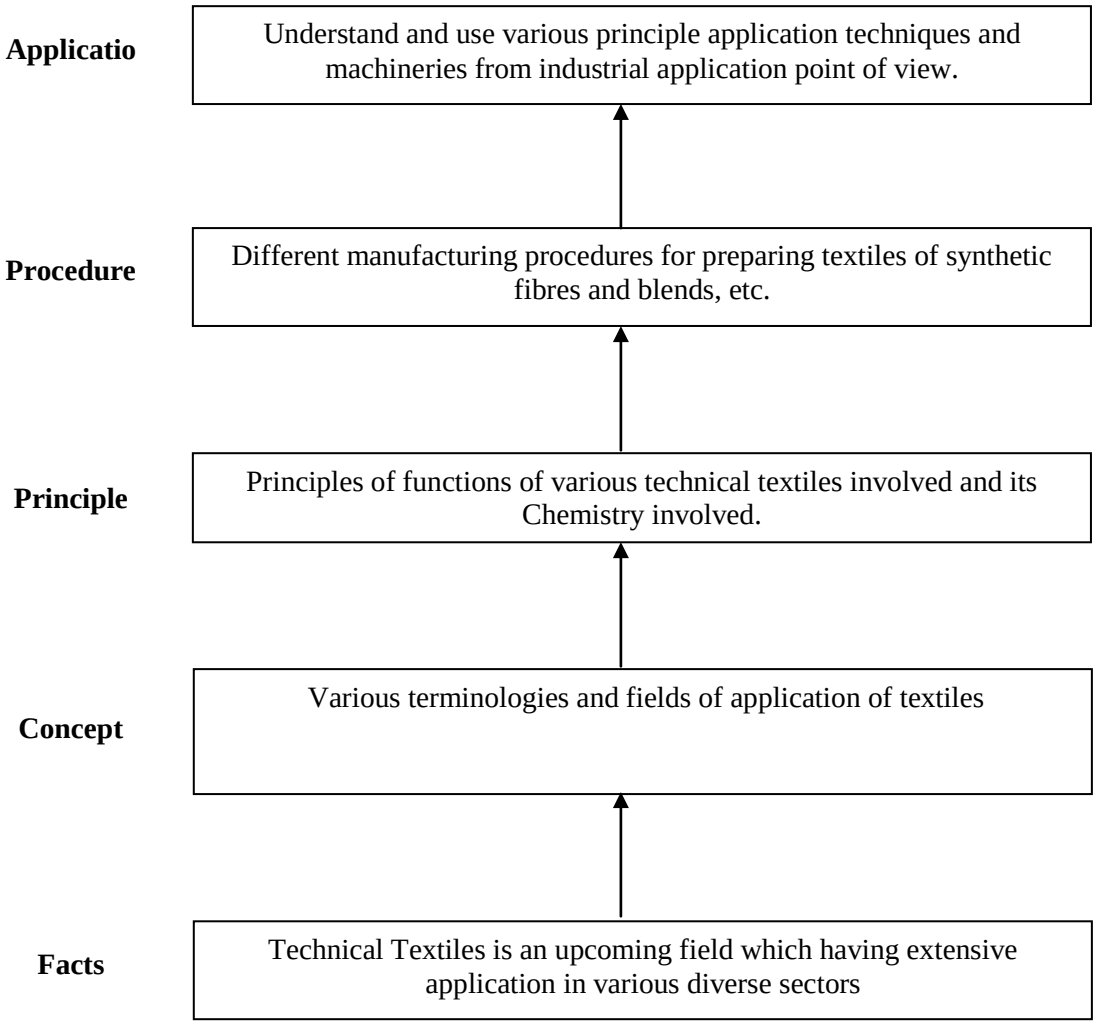
DIPLOMA IN KNITTING TECHNOLOGY
(DKT)

SEMESTER-V

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	
ATC 143501	Technical Textiles	C	Nil	3	--	3	20	--	80	--	---	100
CTK 142502	Raschel Warp Knitting Technology	C	CTK 142404	2/1	3	6	20	50	80	50	---	200
CTK 142503	Seamless Knitting Technology	C	CTK 142403	2	2	4	20	50	80	--	---	150
DTK 144504	Principles of Weaving	C	DTK 144406	2/1	3	6	20	50	80	--	---	150
DTK 144505	Garment Manufacturing Technology	C	Nil	2	3	5	20	50	80	50	--	200
ATN 143506	Seminar and Implant Training	C	Nil	---	3	3	---	---	---	50	50	100
ATN 143507	Industrial Visits*	C	Nil	---	2*	---	---	---	---	---	---	---
DTC 144508 - 11	Elective Subject **	C	Nil	--	3	3	---	50	---	50	--	100
	TOTAL			13	17	30	100	250	400	200	50	1000

*Non Credit Subject
** Process Control in Textile Processing, Man-made Fibre Manufacturing, Knit Product Development, Entrepreneurship Development

Learning Structure:Technical Textiles



COURSE NAME : **DIPLOMA IN MAN-MADE TEXTILE TECHNOLOGY/TEXTILE CHEMISTRY/KNITTING TECHNOLOGY**

COURSE CODE : **DMTT/TC/KT**

SEMESTER : **FIFTH**

SUBJECT TITLE : **TECHNICAL TEXTILES**

SUBJECT CODE : **ATC 143501**

TEACHNING SCHEME			EXAMINATION SCHEME						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	TW	TOTAL
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.

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 - JarmilaSeclova (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 KNITTING TECHNOLOGY

COURSE CODE : DKT

SEMESTER : FIFTH

SUBJECT TITLE : RASCHEL WARP KNITTING TECHNOLOGY

SUBJECT CODE : CTK 142502

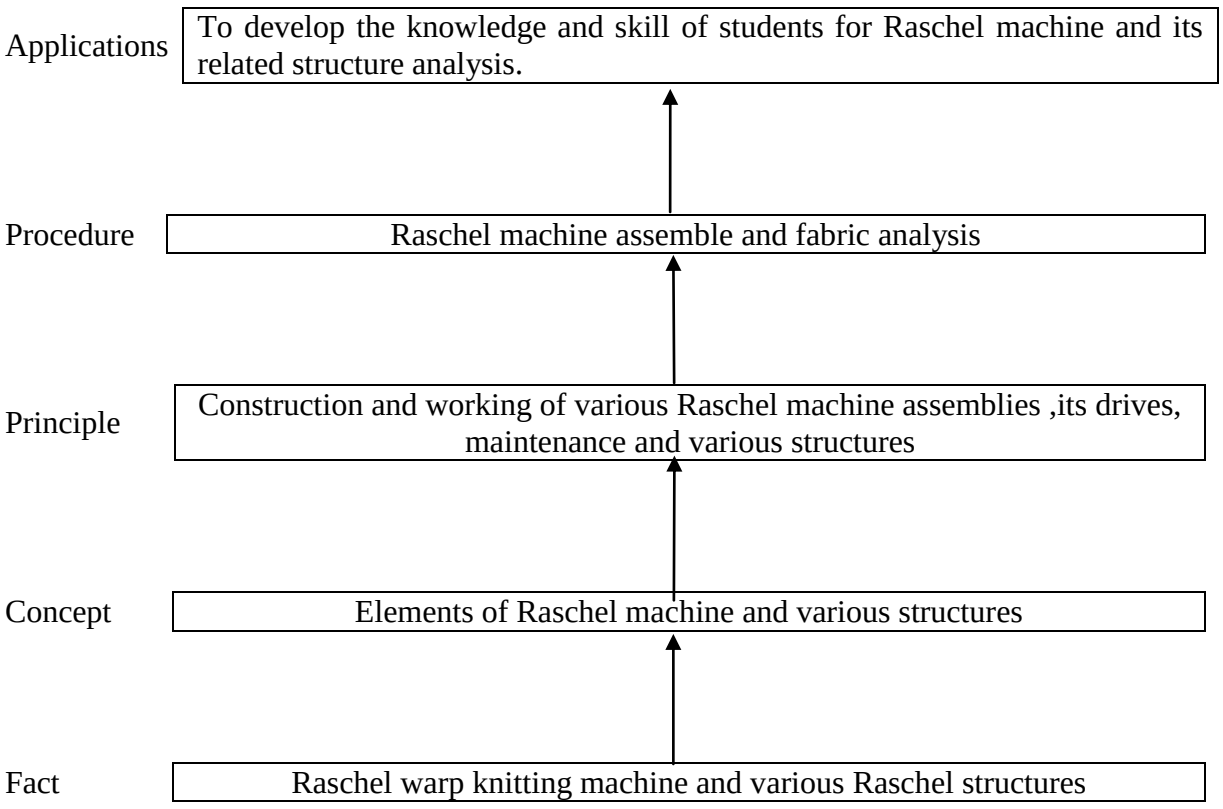
Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
02/01	03	06	03	80	20	50	50	200

RATIONALE

Warp knitting is one of the way of manufacturing of fabric. This subject develops the knowledge and skill in the Raschel warp knitting machine and various Raschel structures.

Raschel Warp Knitting Learning Structure:



SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Fundamentals of Raschel Machine :** 1.1 **Introduction , general terms and definitions, Classification of Raschel knitting machine.** 1.2 **Passage of yarn through Raschel Machine.** 1.3 **Knitting cycle of latch needle on Raschel Machine** 1.4 **Rachel gauge ,needle casting, guides nesting, sinker.** 1.5 Advantages and disadvantages of beard needle and latch needle and their comparison**.** .	12	16
2	**Raschel Warp knitting Machine Assemblies and mechanisms:** **2.1 Knitting elements of Raschel warp knitting.** 2.2 Needle bar mechanism, guide bar mechanism, sinker bar mechanism, warp let-off and fabric take-up mechanism of Raschel knitting machines. 2.3 pattern drum , Chain link.	06	14
3	3.1 Care and maintenance of the Raschel machine. 3.2 Setting up and aligning of Raschel machine. 3.3 Modern developments in Raschel Warp Knitting.	06	10
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
4	4.1 RaschelFabric:single bar fabric, two bar fabric. 4.2 Raschel laces: early raschellaces,modernraschel laces	06	10
5	5.1 marquisette net fabric 5.2 tulle fabric.	11	18
6	Modern development in Raschel machine. 6.1 Raschel type tricot machine. 6.2 fall plate machine.	07	12
	TOTAL	24	40

Raschel Warp Knitting Practical:

List of Experiments:

1	Raschel warp knitting elements.
2	**Raschel knitting cycle.**
3	Needle bar mechanism.
4	Sinker bar mechanism.
5	Presser bar mechanism.
6	Guide bar mechanism.
7	Let off mechanism.
8	Take up mechanism.
9	Analysis of given fabric sample number 1
10	Analysis of given fabric sample number 2
11	Analysis of given fabric sample number 3
12	Analysis of given fabric sample number 4

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	Knitting Technology	David J. Spencer	Woodhead publication ltd
2	Warp Knit Engineering	A. Reisfeld	National Knitted Outerwear Association, New York.
3	Warp Knitting Technology	D.F. Paling	Columbine Press Limited
4	An introduction to the stitch formations in warp knitting		Karl Mayer
5	Warp Knitting Production	Dr. S. Raz	Melliand
6	Knitting Technology	Prof. D.B. Ajgaonkar	Universal Publication Corpn, Bombay
7	An Introduction to warp knitting	D.G.B. Thomas	Merrow

COURSE NAME : DIPLOMA IN KNITTING TECHNOLOGY

COURSE CODE : DKT

SEMESTER : FIFTH

SUBJECT TITLE : SEAMLESS KNITTING TECHNOLOGY

SUBJECT CODE : CTK 142503

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
02	02	04	03	80	20	--	50	150

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
	Section I		
1	Socks Knitting 1.1 Introduction, General Terms and Definitions - Classification of socks and socks knitting machine, Anatomy of socks. 1.2 Classification of heel, toe and welts and their Designing aspects 1.3 Study of circular hose making machine, study of single cylinder and double cylinder socks knitting machine.Study of Various knitting elements on socks knitting machine.Cam and knitting action. 1.4 Loop formation, welt formation, heel construction and toe construction. 1.5 Study of Setting out of sliders for rib structures, Timing and control chain, control shaft, feeder changing and link-link selection	18	30
2	**Fabric process and machine parameter and production calculation for Rib and Interlock weft knit fabric and Socks Knitting**	06	10
	Total	24	40

	Section II		
3	**Study of Flat Knitting Machine** 3.1 Introduction, General terms and definitions, Classification of Flat Knitting Machine, study of Carrier, Cam system and feeding device 3.2 Study of automatic power flat knitting machine, Mechanically controlled jacquard machine, Stoll selectanit and dubied actuator electronic selection 3.3 Multi carriage flat knitting machine 3.4 Flat bed purl knitting machine.	12	20
4	**Study of Circular garment length machine.** 4.1 Introduction to circular garment length machine, classification of garment length machines, knitting elements. 4.2 Working of single cylinder and double cylinder garment length machine, different mechanism, Introduction to RTR garment length machine, Dogless drive and dial shogging. 4.3Development of seamless knitting machine, adjustment of loop length, automation in seamless knitting machine.	12	20
	TOTAL	24	40

PRACTICALS

Practical based on mechanical aspects and fabric analysis will be covering the above-mentioned syllabusas well as it shall cover weft knitting aspect of Third and Forth semester subjectson Weft Knitting.

REFERENCE BOOKS

1. Knitting Technology by J.B. Spencer, Pergamon Press Ltd., Oxford,England .
2. Knitted Fabric Technology by National Knitted Outerwear Association, New York.
3. Knitting by Harry Wignall, Sir Issac Pitman & Sons Ltd., London, England.
4. Jacquard Design and Knitting by J.B. Lancashir, National Knitted Outwear Association, New York.
5. Advance Knitting Principles by Charles Reichman, National Knitted Outerwear Association, New York.
6. Principles of Knitting by W.E. Shinn, Vol. 1 & 2, Clerk Publishing Company, Charlotte-I, N.C.
7. Hosiery Technology by Harry Wignall, National Knitted Outerwear Association, New York.
8. Wool and Synthetics Knitwear Handbook, by Charles Reichman, National Knitted Outerwear Association, New York.

COURSE NAME : DIPLOMA IN KNITTING TECHNOLOGY

COURSE CODE : DKT

SEMESTER : FIFTH

SUBJECT TITLE : PRINCIPLES OF WEAVING

SUBJECT CODE : DTK 144504

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	Paper HRS	TH	Test	Practical	OR	TW	TOTAL
02/1	03	06	03	80	20	----	---	50	150

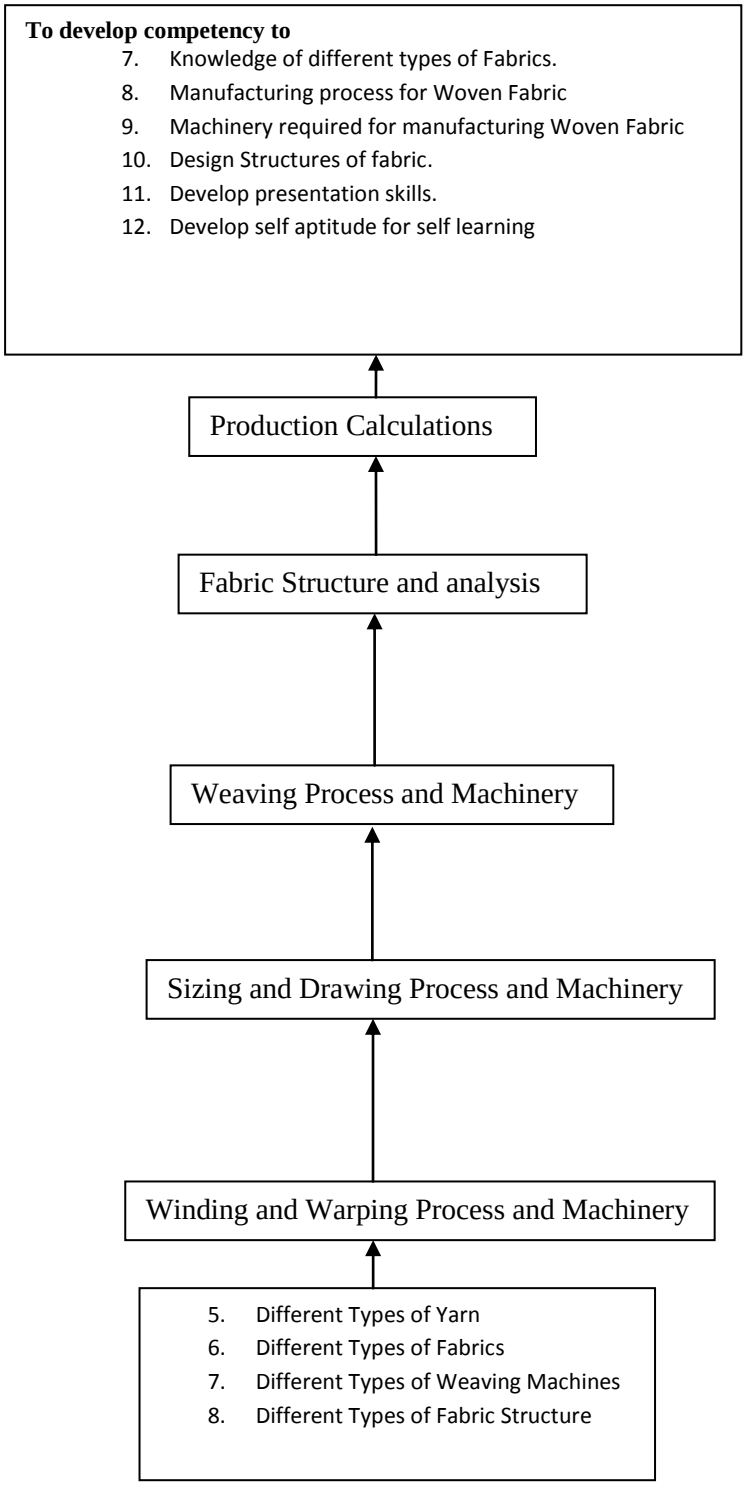
Rationale:-

To introduce various aspects of weaving

To introduce Weaving

To introduce different motions in weaving

To introduce shuttle less looms


To develop competency to
7. Knowledge of different types of Fabrics.
8. Manufacturing process for Woven Fabric
9. Machinery required for manufacturing Woven Fabric
10. Design Structures of fabric.
11. Develop presentation skills.
12. Develop self aptitude for self learning
Production Calculations
Fabric Structure and analysis
Weaving Process and Machinery
Sizing and Drawing Process and Machinery
Winding and Warping Process and Machinery
5. Different Types of Yarn
6. Different Types of Fabrics
7. Different Types of Weaving Machines
8. Different Types of Fabric Structure

Principles of Weaving

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Loom Study:** 1.1 Study of different fabric forming systems, Classification of loom, study of passage of yarn through loom, Study of different motions of weaving and their functions namely Primary, Secondary and Auxiliary motions.	02	04
2	**Shedding Motion:** 2.1 Object, Shedding motion principles, their advantages and disadvantages 2.2 Heald frame reversing mechanism – Single acting mechanism, Compound reversing motion for three heald frames 2.3 Early shedding, Late Shedding, Staggering of Healds 2.4 Function of lease rods and back rest 2.5 Effect of shed timing and back rest setting on fabric properties	05	08
3	**Picking:** 3.1 Object, Essential features of good picking 3.2 Study of cone over pick mechanism, construction of picking tappet 3.3 Study of cone under pick mechanism, Side lever under pick mechanism 3.4 Comparison between under pick and over pick motions 3.5 Disadvantages of shuttle picking 3.6 Study of Shuttle box and shuttle checking device 3.7 Causes of Shuttle flying out and shuttle trapping in the shed	05	08
4	**Beating Up:** 4.1 Object, Study of beat up mechanism 4.2 Eccentricity of slay	02	04
5	**Take – up Mechanism** 5.1 Function, study of Negative take up mechanism 5.2 Study of five wheel take up mechanism **Let off Mechanism** 5.3 Object, Study of chain, lever and weight let – off motion, advantages and disadvantages	02	04
6	**Weft Fork Motion** 6.1 Objects, Principal of working 6.2 Study of Side weft fork motion **Warp Protecting Motion** 6.3 Study of Loose Reed motion 6.4 Study of Fast Reed motion	05	08
7	**Loom production calculations, Weight of warp and weft calculations**	03	04
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Dobby Shedding:** 1.4 Objective, Scope, use and classification of dobby 1.5 Study of single lift dobby, advantages and disadvantages 1.6 Characteristics of Double lift dobby 1.7 Study of Keigbley dobby and climax dobby 1.8 Method of pegging lags	06	8
2	**Jacquard Shedding:** 2.1 Objective, Types of Jacquard 2.2 Study of Single lift Jacquard 2.3 Study of Double lift Single cylinder Jacquard 2.4 Comparison of Single lift and Double lift Jacquard 2.5 Study of Double lift Double cylinder Jacquard 2.6 Advantages of Double lift Jacquard	06	8
3	**Introduction to Unconventional weaving Machines** 3.1 Disadvantages of Shuttle looms 3.2 Common features of unconventional weaving machines 3.2.1 Large weft supply package 3.2.2 Selvedge formation 3.2.3 Weft Accumulator and its advantages 3.2.4 Weft measuring Systems 3.2.5 Weft cutters	02	06
4	**Weft Insertion by Projectile** 4.1 Main features, Advantages 4.2 Principal of weft insertion by Projectile	02	04
5	**Weft Insertion by Rapier** 5.1 Function 5.2 Principal of weft insertion of single pick with single rapier 5.3 Principal of Two phases weft insertion by rapier 5.4 Comparison of Rigid and Flexible rapier	02	04
6	**Weft Insertion by Air Jet** 6.1 Working principle of weft insertion by air jet 6.2 Passage of warp on Maxbo Murata air jet loom 6.3 Relay injection System	02	04
7	**Weft Insertion by Other Methods** 7.1 Difference between Air jet and Water jet type of weft insertion 7.2 Yarn path on Water jet loom 7.3 Introduction to Multiphase weaving machines, principal and advantages 7.4 Problems of Multiphase Weaving machine 7.5 Introduction to Circular weaving machine, principal and advantages	02	04
6	**Study of Basic Fabric defects such as:** Float, Smash, Weft crack, missing pick, missing end, Gout, Temple Mark, Stain, Weft Streaks, Reediness, Weft loops, weft bar, broken pick, lashing-in pick	02	02
	TOTAL	24	40

Principles of Weaving - 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 Tappet shedding mechanism
2	Study of Cone over pick mechanism
3	Study of Cone under pick mechanism
4	Study of Side lever under pick mechanism
5	Study of Beat up mechanism
6	Study of five wheel take up mechanism
7	Study of chain, lever and weight let off mechanism
8	Study of Side weft fork mechanism
9	Study of loose reed mechanism
10	Study of Fast reed mechanism
11	Study of Climax dobby
12	Study of Double lift double cylinder jacquard
13	Study of weft insertion principal in rapier loom
14	Study of weft insertion principal in air jet loom
15	Study of Circular loom

Group B: Solutions to Assignments given in class.

Assignment Number	Topic
1	Study of Tappet shedding mechanism
2	Study of Cone over pick mechanism
3	Study of Cone under pick mechanism
4	Study of Side lever under pick mechanism
5	Study of Beat up mechanism
6	Study of five wheel take up mechanism
7	Study of chain, lever and weight let off mechanism
8	Study of Side weft fork mechanism
9	Study of loose reed mechanism
10	Study of Fast reed mechanism
11	Study of Climax dobby
12	Study of Single lift jacquard
13	Study of double lift single cylinder jacquard
14	Study of Double lift double cylinder jacquard
15	Study of weft insertion principal in projectile loom
16	Study of weft insertion principal in rapier loom
17	Study of weft insertion principal in air jet loom
18	Study of multi phase loom
19	Study of Circular loom

REFERENCES:-

Sr. No.	Name of Book	Author
1	Weaving machines mechanisms management	Talukdar, Sriramulu, Ajgaonkar
2	Yarn Preparation Volume I & II	R. Sengupta
3	Sizing	D. B. Ajgoankar, V. R. Wadekar, M. K. Talukdar
4	Yarn & fabric conversion	P. R. Lord, M. H. Mohamed
5	Cotton yarn Weaving	R.N. Kanoongo and P.R.Roy
6	Yarn & fabric conversion	Mr. J.B. Smith
7	BTRA monograph on Weaving, shuttleless looms	
8	Weaving calculation	R. Sengupta
9	Shuttleless Looms	J. J. Vincent

COURSE NAME : DIPLOMA IN KNITTING TECHNOLOGY

COURSE CODE : DKT

SEMESTER : FIFTH

SUBJECT TITLE : GARMENT MANUFACTURING TECHNOLOGY

SUBJECT CODE : DTK 144505

Teaching and Examination Scheme:

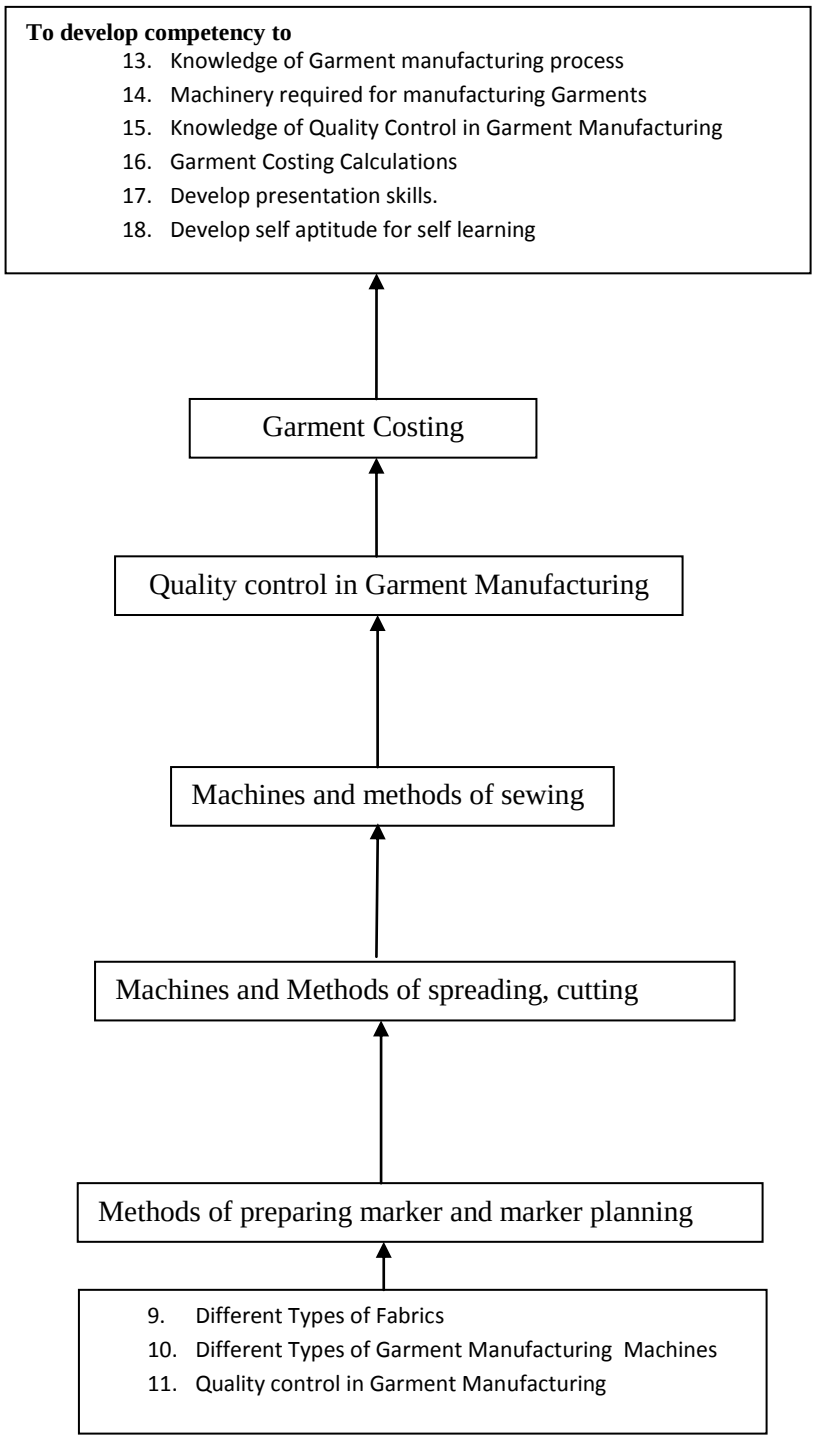
Teaching Scheme			Examination Scheme						
TH/TU	PR	CR	Paper HRS	TH	Test	Practical	OR	TW	TOTAL
02	03	05	03	80	20	50	---	50	200

Rationale:-

To introduce various aspects of Garment manufacturing

To introduce different methods of spreading, cutting, sewing

To introduce Quality control in Garment manufacturing
To introduce Garment costing calculations


To develop competency to
13. Knowledge of Garment manufacturing process
14. Machinery required for manufacturing Garments
15. Knowledge of Quality Control in Garment Manufacturing
16. Garment Costing Calculations
17. Develop presentation skills.
18. Develop self aptitude for self learning
Garment Costing
Quality control in Garment Manufacturing
Machines and methods of sewing
Machines and Methods of spreading, cutting
Methods of preparing marker and marker planning
9. Different Types of Fabrics
10. Different Types of Garment Manufacturing Machines
11. Quality control in Garment Manufacturing

Garment Manufacturing Technology 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	01	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	04	08
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	02	04
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	08	12
5	**Components and Trims:** 5.1 labels and motifs, linings, interlinings, lace, braid, elastic, buttons, zips	02	04
6	**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
7	**Pressing** 7.1 Purpose of pressing **Garment costing**	03	04
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
1	**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
2	**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	10
3	**In-Process Inspection:** 3.1 Definition, 3.2 Possible Spreading, Cutting, Sewing, Seaming, Assembly and pressing and finishing defects 3.3 Skip bundle sampling plan	08	12
4	**Final Inspection** 4.1 Terminology – Sample, Lot or batch, Lot or batch size, percent defective, process average, Acceptable Quality Level(AQL) 4.1 Determination of Sampling plan from AQL Charts – single sampling, double sampling 4.2 Comparability Checks	06	10
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
	TOTAL	24	40

Garment Manufacturing TechnologyPractical:

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	Hand Stitching of Superimposed Seam
2	Hand Stitching of Lapped Seam
3	Hand Stitching of Bound Seam
4	Hand Stitching of Decorative Seams
5	Taking Body Measurements
6	Preparing Measurement Charts
7	Preparing Basic Bodic Block
8	Preparing Sleeve Block
9	Study of Sewing Machine
10	Study of Over lock and flat lock machine
11	Study of Button hole and Button Sew Machine
12	Attaching Pocket, Preparing Placket
13	Preparing Cuff, Collar

Group B: Solutions to Assignments given in class.

Assignment Number	Topic
1	Garment Industry and its grown in India
2	Development in Garment Manufacturing Machines
3	Total Quality Management
4	Lean Manufacturing
5	Six Sigma

REFERENCES:-

Sr. No.	Name of Book	Author
1	The Technology of Clothing Manufacturing	Harold Carr and Barbara Latham
2	An Introduction to Quality Control for the Apparel Industry	Pradip V. Mehta
3	Lean Thinking	

COURSE NAME : DIPLOMA IN KNITTING TECHNOLOGY
COURSE CODE : DKT
SEMESTER : FIFTH
SUBJECT TITLE : SEMINAR & INPLANT TRAINING
SUBJECT CODE : ATN 143506

Teaching and Examination Scheme:

TEACHNING SCHEME			EXAMINATION SCHEME						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	TW	TOTAL
-	-	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 duringInplant 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.

COURSE NAME : **DIPLOMA IN KNITTING TECHNOLOGY**
COURSE CODE : **DKT**
SEMESTER : **FIFTH**
SUBJECT TITLE : **INDUSTRIAL VISIT**
SUBJECT CODE : **ATN 143507**

TEACHNING SCHEME			EXAMINATION SCHEME						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	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.	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 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 COURSE IN TEXTILE TECHNOLOGY/TEXTILE CHEMISTRY/KNITTING TECHNOLOGY**
COURSE CODE	**:**	**DMTT/TC/KT**
SEMESTER	**:**	**FIFTH**
SUBJECT TITLE	**:**	**PROCESS CONTROL IN TEXTILE PROCESSING**
SUBJECT CODE	**:**	**DTC 144508**

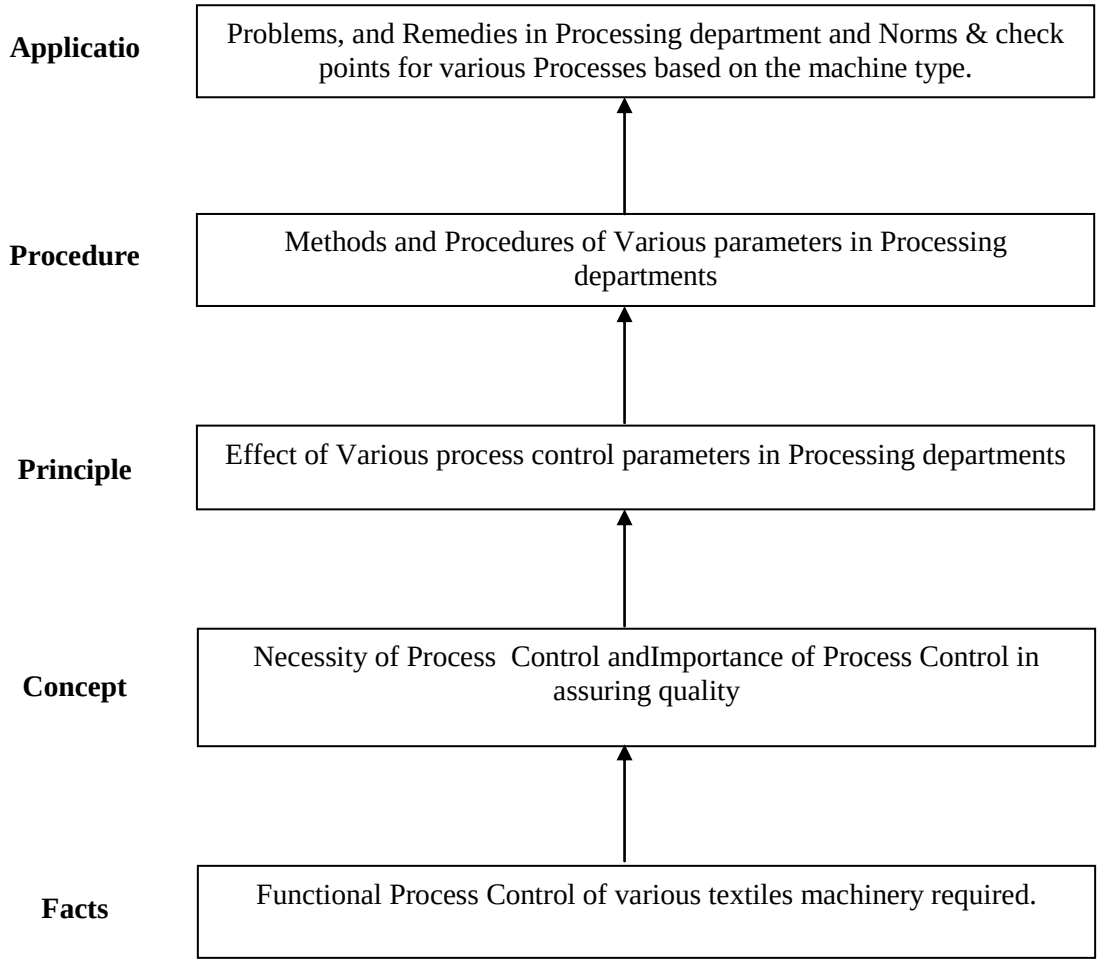
Teaching and Examination Scheme:

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

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

	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 COURSE IN TEXTILE TECHNOLOGY/TEXTILE CHEMISTRY/KNITTING TECHNOLOGY
COURSE CODE : DMTT/TC/KT
SEMESTER : FIFTH
SUBJECT TITLE : MAN-MADE FIBRE MANUFACTURING
SUBJECT CODE : DTC 144509

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

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
5. Textile Institute, First edition 1994.
6. 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
2. Publishers
3. Texturing Technology, Woodhead Publishing Ltd.
4. Guide to texturising and crimping – by R.S.Gandhi

COURSE NAME	**:**	**DIPLOMA COURSE IN TEXTILE TECHNOLOGY/TEXTILE CHEMISTRY/KNITTING TECHNOLOGY**
COURSE CODE	**:**	**DMTT/TC/KT**
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:-

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 NAME : DIPLOMA COURSE IN TEXTILE TECHNOLOGY/TEXTILE CHEMISTRY/KNITTING TECHNOLOGY
COURSE CODE : DMTT/TC/KT
SEMESTER : FIFTH
SUBJECT TITLE : ENTREPRENEURSHIP DEVELOPMENT
SUBJECT CODE : DTC 144511

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

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 TEXTILES
Sasmira, SasmiraMarg, Worli, Mumbai-400 030

TEACHING AND EXAMINATION SCHEME

DIPLOMA IN KNITTING TECHNOLOGY
(DKT)

SEMESTER-VI

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	
MTC 145601	Merchandising Management	C	Nil	3	--	3	20	--	80	--	--	100
ATC 143602	Textile Mill Planning Management	C	Nil	3	--	3	20	--	80	--	--	100
CTK 142603	Advance Knitting Technology	C	CTK 142502 -03	3	3	6	20	50	80	50	--	200
CTK 142604	Advance Spinning Technology	C	Nil	3	3	6	20	50	80	50	--	200
DTK 144605	Woven Fabric Structure	C	DTK 144503	3	3	6	20	50	80	50	--	200
ATK 143606	Project	C	Nil	---	3	3	---	50	---	--	50	100
ATN 143607	Industrial Visits*	C	Nil	---	2*	---	---	---	---	---	---	---
DTC 144608 -12	Elective Subject**	C	Nil	--	3	3	---	50	---	--	50	100
	TOTAL			15	15	30	100	250	400	150	100	1000

*Non Credit Subject
** Computer colour measurment, Narrow Fabric Manufacturing Technology, Product Planning and Control, Electronics in Textiles.

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 and Examination Scheme:

TEACHNING SCHEME			EXAMINATION SCHEME						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	TW	TOTAL
03	-	-	03	80	20	-	-	-	100

RATIONALE

To learn the concept of Management. To discuss and solve case studies in Management. To create awareness about organizations structure, departments, Delegation of authority. To discuss Indian Management and Management of Indian Textile Industry.

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.
To create an awareness and use of marketing concepts like Marketing Miscellaneous Distribution channels, Market Segmentation, Pricing, Traditional Marketing, Modern Marketing etc. To learn and apply the concepts of marketing in the context of Indian Textile Industry in general and garment industry in particular.
To discuss the case studies in marketing and in solving marketing problem.

SECTION – I

	Name of Unit	Lectures	Marks
1	Management, Administration, Organisation, Characteristics, Principles, Levels, Importance, Art, Science, Profession, Process. Management Process, Functions of Management, Decision Making, MBO	05	08
2	Evolution of Management, Thoughts, Management development in India, Traditional Management and Scientific Management. Planning Functions, Types of plans, Mission, objectives. Strategies, Policies, Procedures. Methods, Rules, Programme, Features, Advantages, Disadvantages.	05	08
3	Organisation, Steps in Organising. Formal informal Organisation, Types of Org. Line, Staff, Functional, Committee, Matrix Organisation. Delegation of Authority, Centralisation, Decentralisation, Span of control, Tall flat Organisation	05	09

4	Leadership, Types styles, Features of good leaders, Management Grid. Motivation, Theories of Motivation, Motivation Plan. Personnel Management, Recruitment, Selection, Training, Interviews, Performance Appraisal.	05	09
5	Meaning and Scope of Marketing Management function, Marketing and selling Factors responsible for growth of modern concept of marketing. Functions of Marketing. Functions of Marketing.	04	06

SECTION – II

	Name of Unit	**Lectures**	**Marks**
1	Market Mix, Elements of Market Mix, Marketing strategy. Marketing segmentation, Bases of Segmentation, Advantages Limitations. Distribution channels, wholesales, Retailers, Departmental stores, Super Market. Product planning and Product Development Innovation. Product pricing, Methods, strategy Skimming Pricing, Penetration pricing, Competition, Types of competition price, Non price competition, SWOT Analysis. Product Promotion, Advertising methods of sales promotion packing, branding. Market Research Methods of conducting market research Data collection. Primary and Secondary data. Steps involved in market research. Marketing Environment, Marketing information system, consumerism.	06	09
2	Theories of Entrepreneurship, Entrepreneur Model, Entrepreneur personality Task, self development, self evaluation. Functions of Entrepreneur Traits, types, qualities of successful entrepreneurs. Entrepreneurial motivation Entrepreneur Ambitions, Entrepreneur facilitating factors, compelling factors.	05	09
3	Project Management steps involved in project preparation/formulation. Feasibility report location layout. Types of plant layout	04	06
4	Elements of cost, FC, VC, TC, AFC, AVC, AC, MC, Methods of costing, pricing. Break even point its uses. Investment decisions, methods of evaluating capital projects. Pay back period, ARR/discounted cash flow. 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.	05	09
5	Starting SSI, formalities procedures, Govt. policies, incentives, types of ownership	04	07

REFERENCES

1. Elements of Marketing Management - Mr. Pradeep Kumar
2. Fundamental of Marketing & Finance – Mr. Latif, Mr. Ahmed, Mr. Tiwari& Mr. Birajdar.
3. Marketing Management by Mr. Philip Kotler.
4. Dynamics of Ent. Development & Management by Mr. Vasant Desai.
5. Management of Small Scale Industries by Mr. Vasant Desai.
6. Ent. Development by Mr. Gupta & Mr. Srinivasan.
7. Financial Management by Mr.S. C. Kuchal.
8. Principles of Management by Sherelekar&Sherlekar
9. Principles of Management by Peter Drucker
10. Management practices by RustomDavar
11. Principles & Practices of Management by S. C. Saxena.

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 and Examination Scheme:

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

SECTION-I			
Topic No.	Contents	Hours	Marks
1	**Introduction to Industrial Engineering** 1.1 its definition, productivity, Work study - Method study, work measurement, Technique used for method study and work measurement, job evaluation and merit rating. 1.2Introduction to site selection for a textile unit	10	16
2	**Network Analysis** Critical path method, comparison between PERT and CPM and its application.	07	12
3	**Inventory Control** Economic Order Quantity, ABC analysis, study of EOQ Model.	07	12
	Total	**24**	**40**

SECTION-II			
Topic No.	Contents	Hours	Marks
1	**Introduction to Statistical Quality Control (SQC)** Sampling method, Destructive and non-destructive testing	07	12
2	**Introduction to different types of control chart** X, R, p, np and C chart, its advantages and limitation	07	12
3	**Introduction to Operation Research (O.R.)** Tools of O.R. , Formulation of LP problem, solving LP problem using graphical and simplex method, Assignment problem	10	16
	Total	**24**	**40**

REFERENCES

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

COURSE NAME : DIPLOMA IN KNITTING TECHNOLOGY
COURSE CODE : DKT
SEMESTER : SIXTH
SUBJECT TITLE : ADVANCE KNITTING TECHNOLOGY
SUBJECT CODE : CTK 142603

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
02/01	03	06	03	80	20	50	50	200

RATIONALE
The objectives of this subject is to educate and to developed technical skill of students with various advance processes in the field of weft knitting and warp knitting.

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	Study of Advanced Weft Knit Fabric Manufacturing Method 1.1 Loop transfer stitches, 1.2 Plain loop transfer stitches 1.3 Fancy lacing stitches 1.4 Rib loop transfer stitches 1.5 Eyelet stitches 1.6 Concept of Cable Design 1.7 Concept of Intarsia Design	10	16
2	Manufacturing Technique for Making Some Speciality Fabrics 2.1 Manufacturing of Weft Knitted Fleecy fabrics 2.2 Manufacturing of Weft Knitted plush and pile fabrics 2.3 Manufacturing of Weft Knitted fabrics using loop wheel type knitting machine and sinker wheel machine sliver or high pile machine, warp patterning. 2.4 Manufacturing of Weft Knitted high pile Fabric 2.5 Manufacturing of Weft Knitted warp patterning Fabric 2.6 Machine used for manufacturing Fleecy fabrics fleecy, plush, pile, loop wheel type knitting machine, sinker wheel machine, sliver or high pile machine, warp patterning. 2.7 Machine used for manufacturing Fleecy fabrics fleecy, plush, pile, loop wheel type knitting machine, sinker wheel machine, sliver or high pile machine, warp patterning.	10	16
3	Modern Development in Weft knitting	04	08
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
4	4.1 Introduction to Double Needle Bar / Simplex Warp Knitting Machine 4.2 Passage of material through Simplex Warp Knitting machine 4.3 Knitting Elements of Simplex Warp Knitting machine 4.4 Knitting Cylce Simplex Warp Knitting machine	10	16
5	Milanese Machine 5.1 Introduction to Various Milanese Machine – Continental, English 5.2 Introduction to Some Basic Milanese Fabrics	10	16
6	Modern Development in Raschel and Tricot Warp Knitting Machine	04	08
	TOTAL	24	40

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	Knitting Technology	David J. Spencer	Woodhead publication ltd
2	Warp Knit Engineering	A. Reisfeld	National Knitted Outerwear Association, New York.
3	Warp Knitting Technology	D.F. Paling	Columbine Press Limited
4	An introduction to the stitch formations in warp knitting		Karl Mayer
5	Warp Knitting Production	Dr. S. Raz	Melliand
6	Knitting Technology	Prof. D.B. Ajgaonkar	Universal Publication Corpn, Bombay
7	An Introduction to warp knitting	D.G.B. Thomas	Merrow

COURSE NAME : DIPLOMA IN KNITTING TECHNOLOGY
COURSE CODE : DKT
SEMESTER : SIXTH
SUBJECT TITLE : ADVANCE SPINNING TECHNOLOGY
SUBJECT CODE : CTK 142604

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH/TU	PR	CR	PAPER HRS	THEORY	SESSIONAL	PR	TW	TOTAL
02/01	03	06	03	80	20	50	50	200

RATIONALE
The objectives of this subject is to educate student of various unconventional spinning processes like Electrostatic spinning, Air vortex spinning, Friction spinning, Wrap spinning, False twist spinning, Rotor spinning etc.

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	1.1 Introduction to various unconventional spinning processes. 1.2 Classification based on technology. 1.3 Limitations of ring spinning. 1.4 Advantages and disadvantages of new spinning system. 1.5 Comparison between open end yarn and ring spun yarn.	09	15
2	2.1 Open end spinning process: Study of various open end spinning processes. 2.2 Principle of operation of Electrostatic spinning, 2.3 Air-vortex spinning, 2.4 Friction spinning; 2.5 Dref-II and Dref-III 2.6.Problems and Advantages. Yarn Characteristics, comparison of above processes	15	25
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
4	False twist spinning: 4.1 Principle of operation of Air-jet spinning. 4.2 principle of formation of yarn, raw material characteristics, 4.3 AJ-yarn properties, comparison with ring and rotor yarn.	07	12
5	Rotor spinning:- 5.1 Principle operation of rotor spinning, 5.2 Elements of rotor spinning; Opening unit, Trash removal, Fibre guiding/transport. 5.3 Design features and specifications of Rotor	11	18
6	Wrap spinning: 6.1 Principle operation of Self-twist spinning, 6.2 Bobtex spinning, 6.3 Zero twist yarn, 6.4 parafil (SUSSCH) spinning.	06	10
	TOTAL	24	40

REFERENCES:-

Sr. No.	Name of Book	Author	Publication
1	New spinning systems	W.Klien	The Textile Institute
2	New spinning systems	R.V.MahendraGowda	NCUTE Publications
3			
4			
5			
6			
7			

COURSE NAME : DIPLOMA IN KNITTING TECHNOLOGY
COURSE CODE : DKT
SEMESTER : SIXTH
SUBJECT TITLE : WOVEN FABRIC STRUCTURE
SUBJECT CODE : DTK 144605

Teaching and Examination Scheme:

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

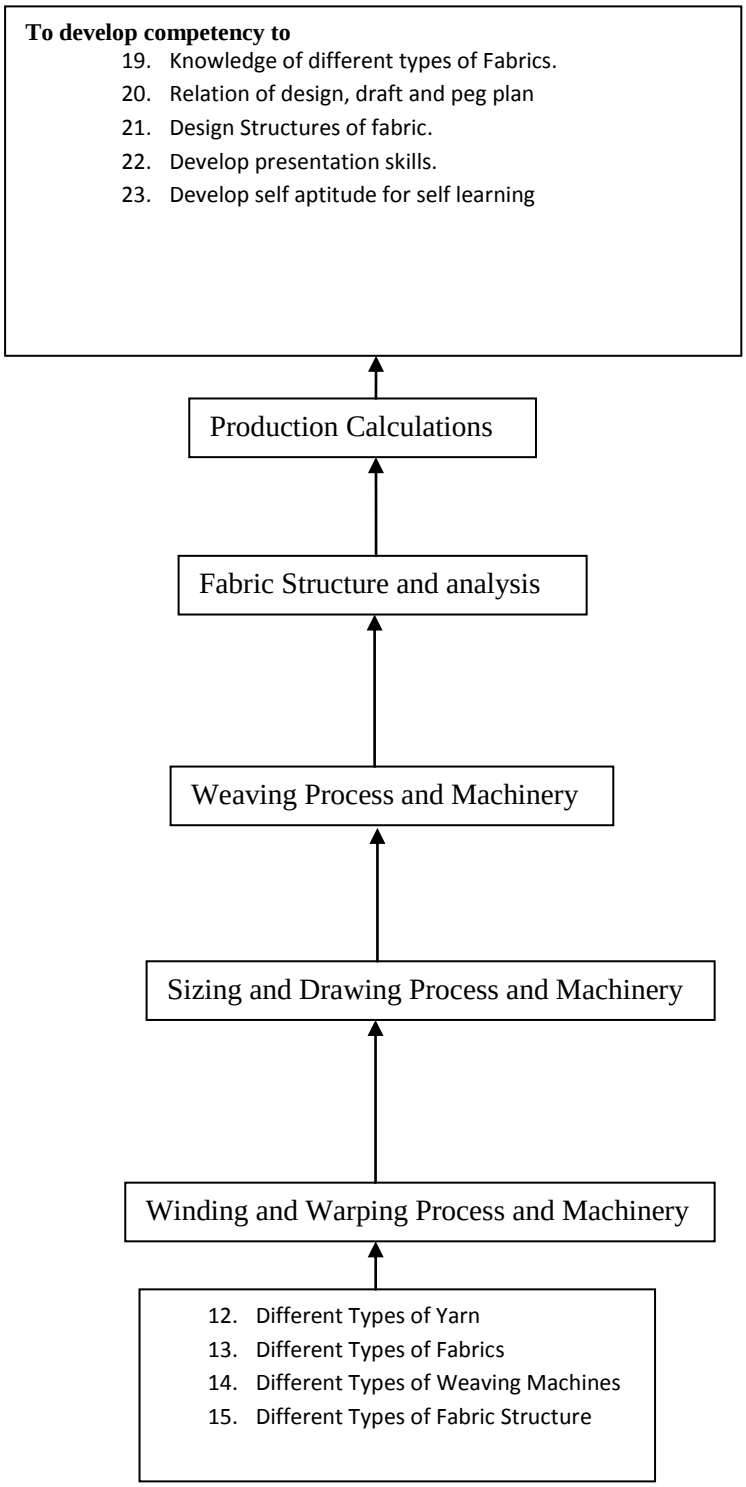
Rationale:-

To introduce various aspects of Woven Structures

To introduce Plain Weave

To introduce Twill Weave

To introduce Sateen Wave


To develop competency to
19. Knowledge of different types of Fabrics.
20. Relation of design, draft and peg plan
21. Design Structures of fabric.
22. Develop presentation skills.
23. Develop self aptitude for self learning
Production Calculations
Fabric Structure and analysis
Weaving Process and Machinery
Sizing and Drawing Process and Machinery
Winding and Warping Process and Machinery
12. Different Types of Yarn
13. Different Types of Fabrics
14. Different Types of Weaving Machines
15. Different Types of Fabric Structure

Woven Fabric Structure Theory:

SECTION-I			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Elements of Woven Designs** 1.8 Method of fabric representation. 1.9 Weave repeat unit, Use of point-paper. 1.10 Concept of Design, Draft and Peg plan, Denting plan. 1.11 Construction of Draft and Peg plan from the design. 1.12 Significance of Draft and Peg-plan. 1.13 Different drafts used – straight draft, Skip draft, sateen draft, Point draft& Herringbone draft.	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 b) Weft Rib c) Mat/Hopsack/Basket	07	12
3	**Twill Weave:** 3.1 Systematic construction of twill on 3, 4 5 & 6 heald shafts. 3.5 Derivatives of twill – Horizontal zig-zag twill, Vertical zig-zag twill, Curved twill, Herringbone twill, broken Twill, Transposed twill,	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.	04	08
5	**Crimp Calculations**	01	02
	TOTAL	24	40

SECTION-II			
Topic No.	**Contents**	**Hours**	**Marks**
1	**Constructional Details of Furnishing and Toweling weaves** 1.1 Honey comb – Regular Honey comb 1.2 Huck a back - 1.3 Mock Leno – a) Perforated fabrics b) Distorted thread effect 1.4 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. 1.5 Bedford cord- Plain faced Bedford cord 1.6 Diamond weave 1.7 Diaper weave	10	16
2	**Simple Colour and Weave Effect-** 2.1 General considerations arising from combination of weave with colour. 2.2 Representation of colour and weave effect upon design paper. 2.3 Classification of colour and weave effect. 2.4 Method of producing variety of effect in the same weave and colour pattern. 2.5 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.	06	10
3	**Compound Colour& Weave Effect -** Stripe colour and weave effect,Check colour and weave effect,**Double Cloth –** Principal and Classification	06	10
4	Construction particulars of Cambric, Chiffon, Georgette, Crepe, Denim, Damask, Drills, Madras shirting, Poplin Quilts, Taffeta, Dhooties	2	04
	TOTAL	24	40

Woven Fabric Structure 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	Analysis of Plain weave sample – Industrial fabric
2	Analysis of Plain weave sample – Stripe design, Checks design, Warp Rib, Mat.
3	Analysis of Twill weave sample – 2/1, 3/1 & 2/2 Twill
4	Analysis of Pointed Twill sample.
5	Analysis of Herringbone Twill sample.
6	Analysis of Sateen sample.
7	Analysis of Sateen Stripes sample.
8	Analysis of Honey comb sample.
9	Analysis of Huck a Back sample.
10	Analysis of Mock leno sample.
11	Analysis of Bedford cord sample.
12	Analysis of Simple Colour& Weave Effect sample- Hound's tooth
13	Analysis of Simple Colour& Weave Effect sample- Step Pattern
14	Collection of different fabric Samples

Group B: Solutions to 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.
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 Plain faced Bedford cord
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.

REFERENCES:-

Sr. No.	Name of Book	Author
1	Watson's Textile Design &Colour (Elementary Weaves and Figured Fabrics)	Z. Grosicki
2	Woven Cloth Construction	A.T.C.Robinson
3	Textile Designs	Nisbet

COURSE NAME : DIPLOMA IN KNITTING TECHNOLOGY
COURSE CODE : DKT
SEMESTER : SIXTH
SUBJECT TITLE : PROJECT
SUBJECT CODE : ATK 143606

TEACHNING SCHEME			EXAMINATION SCHEME						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	TW	TOTAL
-	-	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 - 50 Marks
Oral Presentation - 50 Marks

COURSE NAME : **DIPLOMA IN KNITTING TECHNOLOGY**
COURSE CODE : **DKT**
SEMESTER : **SIXTH**
SUBJECT TITLE : **INDUSTRIAL VISIT**
SUBJECT CODE : **ATN 143607**

TEACHNING SCHEME			EXAMINATION SCHEME						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	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
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/CHEMISTRY/KNITTING TECHNOLOGY**
COURSE CODE	**DMTT/TC/KT**
SEMESTER	**SIXTH**
SUBJECT TITLE	**COMPUTER COLOUR MEASUREMENT**
SUBJECT CODE	**DTC 144608**

TEACHNING SCHEME			EXAMINATION SCHEME						
TH	**TU**	**PR**	**PAPER HRS**	**TH**	**TEST**	**PR**	**OR**	**TW**	**TOTAL**
-	**-**	**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.

	Name of Unit	No. of Practical
1	**Introduction to Colour** **Specific Objectives:** Colour Sensation – physiological and psychology, mechanism of color vision, ColourColourant (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 compositionSpecific 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 MunsellColour 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	01

	ofcolour.CIE numerical system for colour definitionand its components – illuminants, the versions of the standard observer, the colour scales, chromaticity diagram.	
4	**Metamerism&FlourescentColoursSpecific 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 VisionSpecific 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 ofColours,simultaneousand Successive contrast	01
6	**Fundamentals of Colorimetry and SpectrophotometrySpecific Objectives:** Fundamentals of Colorimetry (Tristimulusclorimetry 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 ofreflectance/transmission using ComputerColour 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:** KubelkaMunk 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 KubelkaMunk 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/CHEMISTRY/KNITTING TECHNOLOGY**
COURSE CODE	**DMTT/TC/KT**
SEMESTER	**SIXTH**
SUBJECT TITLE	**NARROW FABRIC MANUFACTURING TECHNOLOGY**
SUBJECT CODE	**DTC 144609**

Teaching & Examination Scheme

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. 8. **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 NAME	**DIPLOMA IN MAN MADE TEXTILE TECHNOLOGY/CHEMISTRY/KNITTING TECHNOLOGY**
COURSE CODE	**DMTT/TC/KT**
SEMESTER	**SIXTH**
SUBJECT TITLE	**PRODUCTION PLANNING AND CONTROL**
SUBJECT CODE	**DTC 144610**

Teaching & 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

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 & Examination Scheme

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

List of Assignmnts:-

1. Forward and reverse bias characteristics of diode.
2. Half wave rectifier (with and without filter).
3. Full wave rectifier (with and without filter).
4. I/O characteristics of transistor in CE configuration
5. Op-amp inverting and non-inverting amplifier.
6. UJT characteristics
7. Study of AC power control using triac.
8. LDR characteristics.
9. Speed measurement using optical and magnetic pickups.
10. Study of RTD and thermister characteristics.
11. Study of strain gauge characteristics.
12. Study of LVDT characteristics.
13. Study of inductive and capacitive pickup.
14. Study of SCR characteristics
15. Study of basic gates.

Reference Books :-

1. Basic Electronics and Linear Circuits by N.N. Bhargava, D.C. Kulshreshtha TMH Pub.
2. Electronic Devices and Circuits by Allen Mottershade, PHI Pub.
3. Modern Industrial Electronics by T.J. Maloney. Fourth Edition, Prentice Hall Pub.
4. Electrical and Electronics Measurements and Instrumentation by A.K. Sawhey, Dhanpat Ria and Sons Pub.
5. Instrumentation Devices and Systems by C.S. Rangan, G.R. Sharma, TMH Pub.
6. Electronics Components and Materials by Madhuri Joshi
7. Op-amp and Linear Integrated Circuits by Ramakant Gaykwad.
8. Thyristor and their Applications by Ramamurthi

   Digital Principles and applications by Malvino and Leach