

**STATE BOARD OF TECHNICAL EDUCATION, BIHAR**  
**Scheme of Teaching and Examinations for**  
**III<sup>RD</sup> SEMESTER DIPLOMA IN TEXTILE ENGINEERING**

(Effective from Session 2020-21 Batch)

**THEORY**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME							Credits
			Periods per Week	Hours of Exam.	Teacher's Assessment (TA) Marks (A)	Class Test (CT) Marks (B)	End Semester Exam. (ESE) Marks (C)	Total Marks (A+B+C)	Pass Marks ESE	Pass Marks in the Subject	
1.	Applied Mathematics	2000301	04	03	10	20	70	100	28	40	03
2.	Computer Programming Through 'C'	2000302	03	03	10	20	70	100	28	40	03
3.	Textile Fibres	2028303	02	03	10	20	70	100	28	40	03
4.	Yarn Manufacture-I	2028304	03	03	10	20	70	100	28	40	03
5.	Fabric Manufacture-I	2028305	03	03	10	20	70	100	28	40	03
<b>Total:</b>			<b>15</b>				<b>350</b>	<b>500</b>			<b>15</b>

**PRACTICAL**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME					Credits
			Periods per Week	Hours of Exam.	Practical (ESE)		Total Marks	Pass Marks in the Subject	
					Internal (PA)	External (ESE)			
6.	Computer Programming through "C" Lab.	2000306	06 50% Physical 50% Virtual	03	15	35	50	20	03
7.	Yarn Manufacture Lab. – I	2028307	04 50% Physical 50% Virtual	03	15	35	50	20	02
8.	Fabric Manufacture Lab. – I	2028308	02 50% Physical 50% Virtual	03	15	35	50	20	01
<b>Total: - 12</b>							<b>150</b>		<b>06</b>

**TERM WORK**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME				Credits
			Periods per week	Marks of Internal (PA)	Marks of External (ESE)	Total Marks	Pass Marks in the Subject	
9.	Yarn Manufacture – I (TW)	2028309	02	15	35	50	20	01
10.	Python / Others (TW)	2000310	02	07	18	25	10	01
11.	Fabric Manufacture – I (TW)	2028311	02	07	18	25	10	01
<b>Total: - 06</b>						<b>100</b>		<b>03</b>
Total Periods per week Each of duration one Hours = <b>33</b>						<b>Total Marks = 750</b>		<b>24</b>

## APPLIED MATHEMATICS

<b>Subject Code 2000301</b>	<b>Theory</b>			No of Period in one session :48			<b>Credits  03</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>04</b>	—	—	<b>TA</b>	<b>:</b>	<b>10</b>	
	—	—	—	<b>CT</b>	<b>:</b>	<b>20</b>	

### Contents: Theory

	Name of the Topic	Hrs	Marks
Unit -1	<b>Integration:</b> 1.1 Definition of integration as anti-derivative. Integration of standard function. 1.2 Rules of integration (Integrals of sum, difference, scalar multiplication). 1.3 Methods of Integration. 1.3.1 Integration by substitution 1.3.2 Integration of rational functions. 1.3.3 Integration by partial fractions. 1.3.4 Integration by trigonometric transformation. 1.3.5 Integration by parts. 1.4 Definite Integration. 1.4.1 Definition of definite integral. 1.4.2 Properties of definite integral with simple problems. 1.5 Applications of definite integrals. 1.5.1 Area under the curve. 1.5.2 Area between two curves. 1.5.3 Mean and RMS values	<b>12</b>	<b>20</b>
Unit -2	<b>Differential Equation</b> 2.1 Definition of differential equation, order and degree of Differential equation. Formation of differential equation for function containing single constant. 2.2 Solution of differential equations of first order and first degree such as Variable separable type, reducible to Variable separable, Homogeneous, Non-homogeneous, Exact, Linear and Bernoulli equations. 2.3 Applications of Differential equations. 2.3.1 Laws of voltage and current related to LC, RC, and LRC Circuits.	<b>10</b>	<b>15</b>
Unit - 3	<b>Laplace Transform</b> 3.1 Definition of Laplace transform, Laplace transform of standard functions. 3.2 Properties of Laplace transform such as Linearity, first shifting, second shifting, multiplication by $t^n$ , division by $t$ . 3.3 Inverse Laplace transforms. Properties- linearly first shifting, second Shifting. Method of partial fractions, 3.4 Convolution theorem. 3.5 Laplace transform of derivatives, 3.6 Solution of differential equation using Laplace transform (up to second order equation).	<b>08</b>	<b>14</b>
Unit - 4	<b>Fourier Series</b> 4.1 Definition of Fourier series (Euler's formula). 4.2 Series expansion of continuous functions in the intervals $(0, 2l)$ , $(-l, l)$ , $(0, 2\pi)$ , $(-\pi, \pi)$ 4.3 Series expansions of even and odd functions. 4.4 Half range series.	<b>08</b>	<b>07</b>

Unit - 5	Numerical Methods		
	5.1 Solution of algebraic equations Bisection method. Regula-falsi method. Newton – Raphson method.	05	07
	5.2 Solution of simultaneous equations containing 2 and 3 unknowns Gauss elimination method. Iterative methods- Gauss seidel and Jacobi's methods.	05	07
	Total	48	70

Text /Reference Books:

Name of Authors	Titles of the Book	Name of the Publisher
Mathematics for polytechnic Calculus: single variable	S. P. Deshpande Robert T. Smith	Pune Vidyarthi Griha Prakashan, Pune Tata McGraw Hill
Laplace Transform Fourier series and boundary value problems	Lipschutz Brown	Schaum outline series. Tata McGraw Hill
Higher Engineering Mathematics	B. S. Grewal	Khanna Publication, New Dehli
Introductory Methods of Numerical analysis	S. S. Sastry	Prentice Hall Of India, New Dehli
Numerical methods for scientific & engineering computations	M. K. Jain & others	Wiley Eastern Publication.

# COMPUTER PROGRAMMING THROUGH 'C'

Subject Code 2000302	Theory			No of Period in one session :50			Credits  03
	No. of Periods Per Week			Full Marks			
	L	T	P/S	ESE	:	70	
	03	—	—	TA	:	10	
			CT	:	20		

## Course Learning Objective:

Computers play a vital role in present day life, more so, in the professional life of technician engineers. In order to enable the students, use the computers effectively in problem solving, this course offers the modern programming language C along with exposition to various engineering applications of computers.

## Objective:

The objectives of this course are to make the students able to:

- Develop efficient algorithms for solving a problem.
- Use the various constructs of a programming language viz. conditional, iteration and recursion.
- Implement the algorithms in “C” language.
- Use simple data structures like array, stacks and linked list solving problems.
- Handling File in “C”.

Contents: Theory		Hrs	Marks
<b><u>Unit -1</u></b>	<p><b><u>Introduction to computer software:</u></b></p> <ul style="list-style-type: none"> <li>➤ Classification of computer software.</li> <li>•System software.</li> <li>•Application software.</li> <li>➤ Programming languages.</li> <li>•Machine languages.</li> <li>•Assembly languages.</li> <li>•High level programming languages.</li> <li>➤ Algorithms and flowchart.</li> </ul>	[03]	
<b><u>Unit -2</u></b>	<p><b><u>Fundamental of C languages.</u></b></p> <ul style="list-style-type: none"> <li>➤ Introduction.</li> <li>•Background.</li> <li>•Characteristics of C.</li> <li>•Uses of C.</li> <li>➤ Structure of a C program.</li> <li>➤ Writing the first C program.</li> <li>➤ Files used in a C program.</li> <li>•Source code files.</li> <li>•Header files.</li> <li>•Object files.</li> <li>•Binary executable files.</li> <li>➤ Compiling and Executing C programs.</li> </ul>	[08]	

	<ul style="list-style-type: none"> <li>➤ Using comments.</li> <li>➤ Characters used in C.</li> <li>➤ Identifier.</li> <li>➤ Keyword or Reserved words.</li> <li>➤ Tokens.</li> <li>➤ Constants. <ul style="list-style-type: none"> <li>• Numeric constant.</li> <li>• String Character constant.</li> </ul> </li> <li>➤ Variables.</li> <li>➤ Variable Declaration.</li> <li>➤ Basic Data Types.</li> <li>➤ Additional Data types.</li> <li>➤ Operators and Expressions.</li> <li>➤ Operator Precedence and Associativity.</li> <li>➤ Type conversion and Type casting.</li> <li>➤ Input/ Output statements in C.</li> </ul>		
<b><u>Unit -3</u></b>	<p><b><u>Decision Control and Looping Statements:</u></b></p> <ul style="list-style-type: none"> <li>➤ Introduction to Decision control statements.</li> <li>➤ Conditional Branching statements. <ul style="list-style-type: none"> <li>• If statement.</li> <li>• If-else statement.</li> <li>• If-else-if statement.</li> <li>• Switch case.</li> </ul> </li> <li>➤ Iterative statements. <ul style="list-style-type: none"> <li>• While loop.</li> <li>• Do-while loop.</li> <li>• For loop.</li> </ul> </li> <li>➤ Nested loops.</li> <li>➤ Break and continue statements. <ul style="list-style-type: none"> <li>• Break statement.</li> <li>• Continue statement.</li> </ul> </li> <li>➤ Goto statement.</li> </ul>		

<p><b>Unit -4</b></p>	<p><b><u>Functions in 'C'.</u></b></p> <ul style="list-style-type: none"> <li>➤ Uses of functions.</li> <li>➤ User defined functions.</li> <li>➤ Function Declaration.</li> <li>➤ Calling a function.</li> <li>➤ Actual and formal Arguments.</li> <li>➤ Rules to call a function.</li> <li>➤ Function propotype.</li> <li>➤ Recursion.</li> <li>• Use of Recursive function.</li> <li>➤ Local or Internal variables.</li> <li>➤ Global or External variables.</li> <li>➤ Void function.</li> <li>➤ Storage classes in C.</li> <li>• Auto or Automatic Storage class.</li> <li>• Static Storage class.</li> <li>• Extern Storage class.</li> <li>• Register Storage class.</li> </ul>	<p>[07]</p>	
<p><b>Unit -5</b></p>	<p><b><u>Arrays.</u></b></p> <ul style="list-style-type: none"> <li>➤ Introduction.</li> <li>➤ Declaration of Arrays.</li> <li>➤ Accessing the Elements of an Array.</li> <li>• Calculating the address of Array elements.</li> <li>• Calculating the length of an Array.</li> <li>➤ Storing values in Arrays.</li> <li>• Initializing Arrays during Declaration.</li> <li>• Inputting values from the keyboard.</li> <li>• Assigning values to Individual Elements.</li> <li>➤ Operations on Arrays.</li> <li>• Traversing an Array.</li> <li>• Inserting an Element in an Array.</li> <li>• Deleting an Element from an Array.</li> <li>• Merging Two Arrays.</li> <li>• Searching for a value in an Array.</li> <li>➤ Passing Arrays to functions.</li> <li>➤ Two dimensional Arrays.</li> <li>• Declaring Two-dimensional Arrays.</li> <li>• Initializing Two-dimensional Arrays.</li> <li>• Accessing the Elements of two-dimensional Arrays.</li> <li>➤ Operations on Two-dimensional Arrays.</li> </ul>	<p>[07]</p>	

<p><b><u>Unit -6</u></b></p>	<p><b><u>Pointers.</u></b></p> <ul style="list-style-type: none"> <li>➤ Understanding the Computer's Memory.</li> <li>➤ Introduction to pointers.</li> <li>➤ Declaring pointer variables.</li> <li>➤ Pointer Expressions and pointer Arithmetic.</li> <li>➤ Null pointers.</li> <li>➤ Passing Arguments to function using pointer.</li> <li>➤ Pointers and Arrays.</li> <li>➤ Passing an Array to a Function.</li> <li>➤ Dynamic Memory Allocation.</li> <li>• Malloc ( ) function.</li> <li>• Calloc ( ) function.</li> <li>• Realloc ( ) function.</li> <li>• Free ( ) function.</li> </ul>	<p>[07]</p>	
<p><b><u>Unit -7</u></b></p>	<p><b><u>Structures and Unions.</u></b></p> <ul style="list-style-type: none"> <li>➤ Structures.</li> <li>➤ Structure variables and Arrays.</li> <li>• Initialization of structure variable and Array.</li> <li>• Dot (•) Operator.</li> <li>• Assigning value of a structure to Another structure.</li> <li>➤ Structure within structures.</li> <li>➤ Size of ( ) of a structure.</li> <li>➤ Unions.</li> <li>➤ Size of ( ) unions.</li> <li>➤ Difference between a structure and an union.</li> <li>➤ Enum Data Type.</li> <li>➤ Typedef Declaration.</li> </ul>	<p>[04]</p>	

## **Text / Reference Books -**

1. Programming with C. Second Edition. Tata McGraw-Hill, 2000 - Byron Gottfried
2. How to solve by Computer, Seventh Edition, 2001, Prentice hall of India. - R.G. Dromey
3. Programming with ANSI-C, First Edition, 1996, Tata McGraw hill. - E. Balaguruswami
4. Programming with ANSI & Turbo C. First Edition, Pearson Education. - A. Kamthane
5. Programming with C. First Edition, 1997, Tara McGraw hill. - Venugopla and Prasad
6. The C Programming Language, Second Edition, 2001, Prentice Hall of India. - B. W. Kernighan & D.M. Ritchie
7. Programming in C, Vikash Publishing House Pvt. Ltd., Jungpura, New Delhi. - R. Subburaj
8. Programming with C Language, Tara McGraw Hill, New Delhi. - C. Balagurswami
9. Programming in C, Galgotia Publications Pvt. Ltd. Dariyaganj, New Delhi. - Kris A. Jamsa
10. The Art of C Programming, Narosa Publishing House, New Delhi. - Jones, Robin & Stewart
11. Problem Solving and Programming. Prentice Hall International. - A.C. Kenneth
12. C made easy, McGraw Hill Book Company, 1987. - H. Schildt
13. Software Engineering, McGraw Hill, 1992. - R.S. Pressman
14. Pointers in C, BPB publication, New Delhi. - Yashwant Kanetkar



# TEXTILE FIBRES

<b>Subject Code</b> <b>2028303</b>	<b>Theory</b>			<b>No of Period in one session : 50</b>			<b>Credits</b>  <b>03</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>02</b>	—	—	<b>TA</b>	<b>:</b>	<b>70</b>	
				<b>CT</b>	<b>:</b>	<b>10</b>	

**Rationale:** Textile fibres are an extremely important part of the textile manufacturing process. In this course the students will explore various kinds of textile fibres and learn what makes them right for the job.

**Objectives:** The students will be able to –

- Know about various kinds of textile fibres.
- Explain properties and uses of different textile fibres.
- Identify various textile fibres.

## Contents: Theory

Name of the Topic		Hrs	Marks
<b>Unit -1</b>	<p style="text-align: center;"><b><u>INTRODUCTION TO TEXTILES</u></b></p> <p>1.1 Textile, Textile Technology, Textile Engineering, Texture and importance of Textile</p> <p>1.2 Textile fibres and filament (definition with examples).</p> <p>1.3 Classification of textile fibres according to source of occurrence.</p>	02	
<b>Unit -2</b>	<p style="text-align: center;"><b><u>PROPERTIES OF TEXTILE FIBRES</u></b></p> <p>2.1 Fiber morphology, the macro and micro structure of a textile fibre and filament, microscopic appearance.</p> <p>2.2 Important Physical Properties of Textile Fibres: staple length, strength, elasticity, uniformity, cohesiveness or spinnability, softness and fineness, resiliency, flexibility, pliability, plasticity, lustre, absorbency, density and specific gravity, colour, abrasion resistance etc.</p>	04	
<b>Unit -3</b>	<p style="text-align: center;"><b><u>NATURAL FIBRES:</u></b></p> <p><b>3.1 Cotton Fibres</b></p> <p>3.1.1 Introduction</p> <p>3.1.2 Growth, cultivation and production of cotton fibres, grading and growing countries, commercial classification or varieties of cotton.</p> <p>3.1.3 Microscopic Appearance and chemical composition of cotton.</p> <p>3.1.4 Physical Properties, Chemical Properties, Thermal Properties and Biological Properties.</p> <p>3.1.5 Uses of Cotton fibres.</p> <p><b>3.2 Wool Fibres</b></p> <p>3.2.1 Introduction</p> <p>3.2.2 Growing of wool, grading of wool (fine, medium, long, crossbreed. mixed).</p> <p>3.2.3 Types of wool (Merino, British, Cross- breed, and carpet).</p> <p>3.2.4 Microscopic structure and appearance, chemical composition.</p> <p>3.2.5 Physical Properties, Chemical Properties, Thermal properties and Electrical properties.</p> <p>3.2.6 Felting of wool.</p> <p>3.2.7 Brief idea of conversion of wool fibres into woolens and worsted yarns.</p> <p>3.2.8 Uses.</p> <p><b>3.3 Silk</b></p> <p>3.3.1 Introduction</p> <p>3.3.2 Types of silk (Mulberry, Tassar, Eri and Muga silk).</p> <p>3.3.3 Production of silk: - Sericulture, reeling of silk and throwing of silk.</p> <p>3.3.4 Wild silk, spun silk, Degumming of silk, chemical composition of silk.</p> <p>3.3.5 Physical Properties, Chemical Properties and Electrical properties of Silk.</p> <p>3.3.6 Microscopic appearance, uses of silk.</p> <p><b>3.4 Jute Fiber</b></p> <p>3.4.1 Introduction.</p> <p>3.4.2 Growth and cultivation: Harvesting, Retting and stripping of jute fibres.</p> <p>3.4.3 Properties and Uses of jute fibres.</p>	20	

<b>Unit -4</b>	<p><b><u>MAN – MADE FIBERS</u></b></p> <p>4.1 Viscose Rayon: Introduction, properties and uses of viscose rayon.</p> <p>4.2 Polynosic Rayon: Introduction, properties and uses of polynosic rayon.</p> <p>4.3 Cuprammonium Rayon: Introduction, chemical constitution, manufacture with flow sheet, properties and uses of cuprammonium rayon.</p> <p>4.4 Acetate Rayon: Rayon: Introduction, manufacture with flow sheet, properties and uses of acetate rayon.</p> <p><b>04.05 Synthetic Fibers</b></p> <p>04.05.01 Polyamide fibers (Nylon): Introduction, properties and uses of polyamide fibers (nylon 6 &amp; nylon 66)</p>	<p>18</p>	
<b>Unit -5</b>	<p><b><u>IDENTIFICATION AND APPLICATION OF TEXTILE FIBRES:</u></b></p> <p>5.1 Identification of textile fibers.</p> <p>5.1.1 Non-Technical Test: Feeling test, burning test, staining test.</p> <p>5.1.2 Technical Test: Microscope test, Density measurement, Chemical test.</p> <p>5.2 Application of Fibers and Textiles: Apparel textiles, bedding and home textiles, interior textile and technical textiles.</p> <p>5.2.1 Technical textiles: Mobile textiles, Geo textiles, Construction textiles, Industrial textiles, Medical textiles, Safety textiles</p>	<p>06</p>	
<b>Total</b>		<b>50</b>	

**Books Recommended:-**

1	Textiles Fibers.	- Dr. V.A.. Shenai
2	Textiles Fibers.	- Mathew
3	Introduction to Textiles Fibers.	- Murthy
4	Man-Made fibers.	- R.W. Moncrieff
5	Textiles Fibers	- ATA
6	Textiles Science.	- Gohl
7	A Textiles Book of Fiber Science and Techonology	- S.P. Mishra
8	Textiles Fibers to Fabric	- Carbman
9	Fabric Care	- D'Souza
10	Essential of Textiles	- Joseph
11	Textile Fibres and Their Use	- Hess

# YARN MANUFACTURE –I

<b>Subject Code 2028304</b>	<b>Theory</b>			<b>No of Period in one session : 50</b>			<b>Credits 03</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
				<b>CT</b>	<b>:</b>	<b>20</b>	

**Rationale:** Yarn Manufacture is one of main activities for a diploma holder technician in Textile Engineering. He is required to handle the yarn manufacture machineries, tools and equipments and also supervise the yarn manufacturing processes. He must be well versed with the subject of Yarn Manufacture.

The subject is being introduced to develop the understanding of yarn manufacturing processes. It will help in discharge of his duties in the world of work as he can understand a problem, analyse the same and take an appropriate decision as and when the job demand.

**Objectives:** After completion of the course student will be able to

- Define the terminologies related with textile machineries and processes.
- Explain the principle and working of the machine
- Sketch the machine parts and label them
- Understand the process of production and their related problem

<u>S.No</u>	<u>Topic periods</u>	
01	Ginning and Bailing	05
02	Mixing, opening and cleaning	15
03	Carding	12
04	Draw frame	07
05	Combing	11
<b>Total -</b>		<b>50</b>

## Contents: Theory

Name of the Topic		Hrs	Marks
<b>Unit-1</b>	<b><u>Ginning and Bailing</u></b> 1.1 Objects of Ginning. 1.2 Description and working of different types of gins- Macarthy Roller gin, Saw gin, Knife Roller gin 1.3 Defects in ginning. 1.4 Objects of bailing 1.5 Bailing process 1.6 Standard bale sizes and weights of bales from important cotton growing countries. 1.7 Bale densities, Different impurities or trash present in the cotton bales. 1.8 Grading of cotton.	<b>05</b>	

<p><b>Unit-2</b></p>	<p><b><u>Mixing, opening and cleaning</u></b></p> <p>2.1 Objects and methods of mixing, opening and cleaning.</p> <p>2.2 Difference between mixing and blending</p> <p>2.3 Detailed Study of blow room machineries for different varieties of cotton.</p> <p>2.3.1 Hopper Bale Breaker and Hopper feeder.</p> <p>2.3.2 Types of conventional openers- Porcupine openers, vertical openers, Two and Three bladed beater, Krischner beater</p> <p>2.3.3 Study of Step cleaner, Axi-flow, Unimix, Uniflex, Cleanomat, and Dedusting machine-Dustex. Study of the chute feed system of transport of material to card.</p> <p>2.4 Detailed Study of conventional scutcher</p> <p>2.5 Lap forming, Delivery cages, filters and dust trunk, grid bars, leaf bars, major and minor cleaning points.</p>	<p><b>15</b></p>	
	<p>2.6 Cotton conveying – Lattice and pneumatic conveying</p> <p>2.7 Advantages of single process blow room line.</p> <p>2.8 Cleaning efficiency of blow room and idea of lap regularity and lap rejection.</p> <p>2.9 Speeds, and production calculations</p> <p>2.10 Modern developments in blow room machinery</p> <p>2.11 Evaluation of blow room performance</p> <p>2.12 Opening lines required for processing of various blends with appropriate speeds and settings.</p>		
<p><b>Unit-3</b></p>	<p><b><u>Carding</u></b></p> <p>3.1 Objects of carding; Basic concepts of Carding Process.</p> <p>3.2 Construction of revolving flat carding machineries</p> <p>3.3 Detailed study and its working, speeds and productions for various types of cotton.</p> <p>3.4 Setting of different parts and effects of changing the setting on sliver quality.</p> <p>3.5 Methods of Stripping and Grinding.</p> <p>3.6 Card clothing – flexible Clothing, Metallic clothing.</p> <p>3.7 Comparison of flexible wire and metallic wire card clothing.</p> <p>3.8 Cleaning efficiency, Nep count.</p> <p>3.9 Features and requirements of high-speed Cards.</p> <p>3.10 Auto-Levelling at Card.</p> <p>3.11 Modern developments in high-speed cards.</p> <p>3.12 Speeds, settings and production calculations of various types of cotton.</p>	<p><b>12</b></p>	
<p><b>Unit-4</b></p>	<p><b><u>Draw frame</u></b></p> <p>4.1 Objects of Draw frames</p> <p>4.2 Principles of roller drafting</p> <p>4.3 Detailed study of draw frame mechanism</p> <p>4.4 Drafting system and their calculations.</p> <p>4.5 Roller slip and its remedies</p> <p>4.6 Roller weighting, Roller settings</p> <p>4.7 Modern drafting on high-speed draw frames</p> <p>4.8 Features of high-speed draw frames.</p> <p>4.9 Condensation and its effect on sliver quality.</p> <p>4.10 Speeds, setting and production Calculations pertaining to draw frames.</p>	<p><b>07</b></p>	

<b>Unit-5</b>	<b><u>Combing</u></b>	<b>11</b>		
	5.1			Objects of combing process
	5.2			Need for preparatory process for comber.
	5.3			Construction and working of preparatory machines to combing – sliver lap machine, Ribbon lap machine, super lap machine.
	5.4			Effect of hook formation at carding on comber lap performance at combing.
	5.5			Amount of pre-comber draft.
	5.6			Recent development in preparatory machines to combing
	5.7			Salient features of modern lap preparatory system.
	05.08			Basic Principle of cotton combing.
	5.9			Construction and working of Nesmith Comber.
	5.10			Setting and timings of different parts of the comber. Adjustment for changing waste percentage on comber. Faults and their remedies.
	5.11			Recent developments in comber.
	5.12			Performance evaluation of combers.
5.13	Speeds, Settings and production calculation pertaining to combing machineries.			
<b>Total</b>		<b>50</b>		

### **Books Recommended**

1. Manual of cotton spinning – vol I to IV, Ed AFW coulson, Textile Institute, Manchester
2. The Institute of Textile Technology USA series on textile processing, S. ZALOSKI
3. Technology of short- staple spinning – Vol I to IV , welkin, Textile institute pub, Manchester
4. Spun yarn Technology, E Ostoby, Butter worths Londen
5. Hand Book of Cotton spinning – William Taggart, universal pub, corp,
6. Essential facts of practical cotton spinning – T.K. Pattabhiram, Soumya pub. Bombay.
7. Cotton spinning calculations – T.K. Pattabhiram, Soumya pub. Bombay
8. Cotton opening & cleaning, Cotton carding, Cotton drawing & roving , Cotton combing – G.R. Merrill .

## FABRIC MANUFACTURE-I

<b>Subject Code 2028305</b>	<b>Theory</b>			<b>No of Period in one session : 50</b>			<b>Credits  03</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>70</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
			<b>CT</b>	<b>:</b>	<b>20</b>		

**Rationale:** The subject is designed to give the basic information of fabric manufacturing methods and complete flowchart details of weaving processes. It also includes motions of looms and their details.

**Objectives:**

- Learning the basic operations on the loom for the production of fabric.

### Contents: Theory

	<b>Name of the Topic</b>	<b>Hrs</b>	<b>Marks</b>
<b>Unit -1</b>	<p><b><u>MOTIONS OF WEAVING:</u></b></p> <p>1.1 Principle and definition of fabric manufacture.</p> <p>1.2 Motions in weaving: Primary motions, Secondary motions and Tertiary motions.</p>	02	
<b>Unit -2</b>	<p><b><u>LOOM:</u></b></p> <p>2.1 Introduction</p> <p>2.2 Types of Loom</p> <p>2.3 Handloom – Brief idea of handloom.</p> <p>2.4 Power loom - Details study of plain tappet looms.</p> <p>2.5 Various parts of loom and its functions.</p>	06	
<b>Unit -3</b>	<p><b><u>SHEDDINGMECHANISM:</u></b></p> <p>3.1 Definition, Types of shed.</p> <p>3.2 Shedding mechanisms and its kinds.</p> <p>3.3 The scope of tappet, dobby and jacquard shedding.</p>	05	
<b>Unit -4</b>	<p><b><u>Tappet Shedding</u></b></p> <p>4.1 Tappets, cam and Difference between cam and tappets.</p> <p>4.2 Types of tappet shedding: Negative and positive tappet shedding.</p> <p>4.3 Various types of tappet shedding: Inside Outside tappet shedding.</p> <p>4.4 Condition of good shedding</p> <p>4.5 Early shedding and late shedding.</p>	08	
<b>Unit -5</b>	<p><b><u>PICKINGMECHANISM:</u></b></p> <p>5.1 Introduction, Methods of picking mechanism.</p> <p>5.2 Types of picking mechanism: cone – over pick mechanism, cone – under pick mechanism and other conventional picking mechanism, Comparison between under pick and over pick.</p> <p>5.3 Shuttle and its types, defects in shuttle and shuttle cop.</p> <p>5.4 Defects in negative picking.</p> <p>5.5 Essential feature to a good pick.</p> <p>5.6 Early and late picking.</p> <p>5.7 Study of the following: picker, picking band, buffer, check strap, swell spring, shuttle guard, shuttle flying, shuttle trapping.</p>	10	
<b>Unit -6</b>	<p><b><u>BEAT-UPMECHANISM:</u></b></p> <p>6.1 Introduction, Construction and Mechanism</p> <p>6.2 Eccentricity of sley motion and its effect on loom working.</p> <p>6.3 Factors affecting the sley, motion.</p>	03	

<b>Unit -7</b>	<b><u>TAKE-UP MOTION:</u></b> 7.1 Introduction, Classification of take up motion: Negative and positive take up motion. 7.2 Five wheel and seven-wheel take - up motion. 7.3 Dividend of loom, calculated dividend and practical dividend, Calculated regarding dividend. 7.4 Changing the number of picks inch.	06	
<b>Unit -8</b>	<b><u>LET- OFF MOTION:</u></b> 8.1 Objects 8.2 Types of let- off motion: Negative and positive let- off motion. 8.3 Types of negatives let –off motion: Frictional let-off motion, Chain, lever and weight let-off motion, Advantages and disadvantages of chain, lever and weight let-off motion. 8.4 Conditions to good let – off motion	04	
<b>Unit -9</b>	<b><u>WEFT FORK MOTION:</u></b> 9.1 Objects and principles 9.2 Types of Weft fork motion: Side Weft fork motion and centre weft fork motion. 9.3 Relative advantages and disadvantages between a side weft fork and centre weft fork motion.	03	
<b>Unit -10</b>	<b><u>WARP PROTECTING MOTION:</u></b> 10.1 Introduction 10.2 Types of Warp Protecting motion: Loose Reed, Fast reed and Electromagnetic Warp Protecting motion. 10.3 Loom knocking off or banging off; Defects of Knocking off.	03	
	<b>Total</b>	<b>50</b>	

**Books Recommended: -**

01.	Weaving Mechanism. Vol. I & II.	-	N.N. Banerjee
02.	The Mechanism of weaving	-	Fox
03.	Principles of weaving	-	Robinson and Marks
04.	Cotton Weaving and Designing	-	J.B. Taylor
05.	Cotton Yarn Weaving	-	A.T.A.
06.	Tappet and Dobby Looms	-	T. Robberts
07	Weaving, Machines, Mechanisms, Management	-	Talukdar
08.	Weaving Technology	-	Kulkarni

# COMPUTER PROGRAMMING THROUGH 'C' LAB

<b>Subject Code 2000306</b>	<b>Practical</b>			<b>No of Period in one session: 60</b>			<b>Credits</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			<b>03</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal (PA)</b>	<b>:</b>	<b>50</b>	
	—	—	<b>06</b>	<b>External (ESE)</b>	<b>:</b>	<b>15</b>	
					<b>35</b>		

### Course Learning Objectives:

This Lab course is intended to practice what is taught in theory class of 'Computer Programming' and become proficient in computer programming. Computer programming is all about regular practice. Students should work on solved and unsolved problems listed in the text books, and the problems given by the teacher. Some of the topics that should necessary be covered in lab are listed below.

### Course outcomes:

Student should be able to write code snippets, and then compile, debug and execute them.

<b>Content: Practical</b>		<b>Hrs</b>	<b>Marks</b>
<b><u>Unit – 1</u></b>	Familiarization with programming environment (Editor, Compiler, etc.)		
<b><u>Unit – 2</u></b>	Programs using, I/O statements and various operators		
<b><u>Unit – 3</u></b>	Programs using expression evaluation and precedence		
<b><u>Unit – 4</u></b>	Programs using decision making statements and branching statements		
<b><u>Unit – 5</u></b>	Programs using loop statements		
<b><u>Unit – 6</u></b>	Programs to demonstrate applications of n dimensional arrays		
<b><u>Unit – 7</u></b>	Programs to demonstrate use of string manipulation functions		
<b><u>Unit – 8</u></b>	Programs to demonstrate parameter passing mechanism		
<b><u>Unit – 9</u></b>	Programs to demonstrate recursion		
<b><u>Unit – 10</u></b>	Programs to demonstrate use of pointers		
<b><u>Unit – 11</u></b>	Programs to demonstrate command line arguments		
<b><u>Unit – 12</u></b>	Programs to demonstrate dynamic memory allocation		
<b><u>Unit – 13</u></b>	Programs to demonstrate file operations		

The language of choice will be C. This is a skill course. More you practice, better it will be.

### Reference Books:

1. Let Us C, Yashavant Kanetkar
2. Problem Solving and Programming in C, R.S. Salaria, Khanna Publishing House
3. C Programming Absolute Beginner's Guide, Dean Miller and Greg Perry
4. The C Programming Language, Kernighan and Ritchie, Prentice Hall of India
5. Programming in ANSI C, E. Balagurusamy, Tata McGraw-Hill
6. C Programming & Data Structures, B. A. Fouruzan and R. F. Gilberg, CENGAGE Learning.



## YARN MANUFACTURE LAB - I

<b>Subject Code 2028307</b>	<b>Practical</b>			<b>No of Period in one session : 60</b>			<b>Credits  02</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal (PA)</b>	<b>:</b>	<b>15</b>	
	—	—	<b>04</b>	<b>External (ESE)</b>	<b>:</b>	<b>35</b>	

**Rationale:** Diploma holder technician in Textile Engineering is very frequently required to set the machines for their efficient running. The course is introduced to develop the skills to measure the diameter of pulley, set machines, and sketch the machine parts for better understanding of the subject.

**Objectives:** Able to develop skill to

- measure diameter of pulley
- Set machines for optimum operation and productivity
- Sketch gear and gearing
- Sketch different machine parts
- Dismantle, resetting the machine parts for better understanding of their functioning.

<u>Sr. No.</u>	<u>Topic</u>	<u>periods</u>
1	Blow room	30
2	Carding	12
3	Draw frame	09
4	Combing	09
<b>Total</b>		<b>60</b>

### Contents: Practical |

<b>List of Experiments: -</b>		<b>Hrs</b>	<b>Marks</b>
<b>Unit -1</b>	<p><b><u>Blow room</u></b></p> <p>1.1 Detailed Study of the working of opening and cleaning machinery in relation to setting and speeds.</p> <p>1.2 Sketching the line and gearing diagrams of blow room machinery</p> <p>1.3 Major and minor cleaning points.</p> <p>1.4 Piano feed regulating motion, Knock- off motion</p> <p>1.5 Show passage of material through each machine of blow room</p> <p>1.6 Calculation of speed, Production, Hank of lap.</p>	<b>30</b>	
<b>Unit -2</b>	<p><b><u>Carding</u></b></p> <p>2.1 Detailed study of the card and show passage of the material through carding machine</p> <p>2.2 Functions of the Card in relation to various parts of the machine</p> <p>2.3 Practicing, stripping , Grinding, setting, oiling, cleaning,</p> <p>2.4 Sketching the line and gearing diagrams of carding machine</p> <p>2.5 Practicing card clothing and mounting of fillet on cylinder, doffer and flats</p> <p>2.6 Calculation of speeds and production of the machines.</p>	<b>12</b>	
<b>Unit -3</b>	<p><b><u>Draw frame</u></b></p> <p>3.1 Sketching the line and gearing diagrams of draw frame</p> <p>3.2 Demonstration of the working of draw frames.</p> <p>3.3 Dismantling refitting and resetting of the draw frames for different cottons and hanks.</p> <p>3.4 Calculations of speeds , drafts and production pertaining to the above machines</p>	<b>09</b>	
<b>Unit -4</b>	<p><b><u>Combing</u></b></p> <p>4.1 Sketching the line and gearing diagrams of preparatory machines to the comber</p> <p>4.2 Demonstration of the working of the preparatory machines to the comber</p> <p>4.3 Dismantling, refitting and resetting of the machines for different cottons and counts.</p> <p>4.4 Sketching the line and gearing diagrams of combing machines.</p> <p>4.5 Calculations of speeds, drafts and production pertaining to the above machines.</p>	<b>09</b>	
<b>Total-</b>		<b>60</b>	

## FABRIC MANUFACTURE LAB-I

<b>Subject Code 2028308</b>	<b>Practical</b>			<b>No of Period in one session: 30</b>			<b>Credits  01</b>	
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>				<b>: 50</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>					
	—	—	<b>02</b>	<b>Internal (PA)</b>				<b>: 15</b>
				<b>External (ESE)</b>				<b>: 35</b>

### Contents: Practical

<b>List of Experiments :-</b>		<b>Hrs</b>	<b>Marks</b>
<b>Unit -1</b>	<b><u>PRIMARY MOTIONS:</u></b> 5.1 Detailed study of primary motions 5.1.1 Shedding 5.1.2 Picking 5.1.3 Beat Up 5.2 Dismantling and resetting of the parts of the above motions. 5.3 Sketching the above motion parts.	10	
<b>Unit -2</b>	<b><u>SECONDARY MOTIONS:</u></b> 6.1 Detailed study of secondary motions 6.1.1 Take Up Motion (5 wheels and 7 wheels) 6.1.2 Let Off Motion 6.2 Dismantling and resetting of the parts of the motions. 6.3 Sketching the above motion parts.	07	
<b>Unit -3</b>	<b><u>TERTIARY MOTIONS:</u></b> 7.1 Detailed study of the tertiary motions 7.1.1 Weft Fork Motion 7.1.2 Warp Protecting Motion (Loose reed & fast reed) 7.2 Dismantling and resetting of the above motions. 7.3 Sketching the above motion parts.	08	
<b>Unit -4</b>	<b><u>LOOMS:</u></b> 8.1 Study the handloom and practice of weaving on them. 8.2 Study the Power loom and practice of weaving on them.	05	
<b>Total</b>		<b>30</b>	

# YARN MANUFACTURE I - TW

<b>Subject Code 2028309</b>	<b>Term Work</b>			<b>No of Period in one session: 30</b>			<b>Credits</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>50</b>	<b>01</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal (PA)</b>	<b>:</b>	<b>15</b>	
	—	—	<b>02</b>	<b>External (ESE)</b>	<b>:</b>	<b>35</b>	

## Contents: Term Work

List of Term Work: -		Hrs	Marks
<b>Unit -1</b>	<p><b><u>Blow room</u></b></p> <p>1.7 Detailed Study of the working of opening and cleaning machinery in relation to setting and speeds.</p> <p>1.8 Sketching the line and gearing diagrams of blow room machinery</p> <p>1.9 Major and minor cleaning points.</p> <p>1.10 Piano feed regulating motion, Knock- off motion</p> <p>1.11 Show passage of material through each machine of blow room</p> <p>1.12 Calculation of speed, Production, Hank of lap.</p>	<b>15</b>	
<b>Unit -2</b>	<p><b><u>Carding</u></b></p> <p>2.7 Detailed study of the card and show passage of the material through carding machine</p> <p>2.8 Functions of the Card in relation to various parts of the machine</p> <p>2.9 Practicing, stripping , Grinding, setting, oiling, cleaning,</p> <p>2.10 Sketching the line and gearing diagrams of carding machine</p> <p>2.11 Practicing card clothing and mounting of fillet on cylinder, doffer and flats</p> <p>2.12 Calculation of speeds and production of the machines.</p>	<b>06</b>	
<b>Unit -3</b>	<p><b><u>Draw frame</u></b></p> <p>3.5 Sketching the line and gearing diagrams of draw frame</p> <p>3.6 Demonstration of the working of draw frames.</p> <p>3.7 Dismantling refitting and resetting of the draw frames for different cottons and hanks.</p> <p>3.8 Calculations of speeds, drafts and production pertaining to the above machines</p>	<b>05</b>	
<b>Unit -4</b>	<p><b><u>Combing</u></b></p> <p>4.6 Sketching the line and gearing diagrams of preparatory machines to the comber</p> <p>4.7 Demonstration of the working of the preparatory machines to the comber</p> <p>4.8 Dismantling, refitting and resetting of the machines for different cottons and counts.</p> <p>4.9 Sketching the line and gearing diagrams of combing machines.</p> <p>4.10 Calculations of speeds, drafts and production pertaining to the above machines.</p>	<b>04</b>	
<b>Total-</b>		<b>30</b>	

## PYTHON / OTHERS - TW

<b>Subject Code 2000310</b>	<b>Term Work</b>						<b>Credits</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>25</b>	<b>01</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal (PA)</b>	<b>:</b>	<b>07</b>	
	—	—	<b>02</b>	<b>External (ESE)</b>	<b>:</b>	<b>18</b>	

<b>CONTENTS</b>		<b>Hrs.</b>	<b>Marks</b>
<b>UNIT – 01</b>	Write a program to demonstrate basic data type in python.		
<b>UNIT – 02</b>	Write a program to compute distance between two points taking input from the user (Pythagorean Theorem)		
<b>UNIT – 03</b>	Write a python program Using for loop, write a program that prints out the decimal equivalent of $1+\frac{1}{2}+\frac{1}{3}+\dots+\frac{1}{n}$		
<b>UNIT – 04</b>	Write a Python program to find first n prime numbers. Write a program to demonstrate list and tuple in python.		
<b>UNIT – 05</b>	Write a program using a for loop that loops over a sequence. Write a program using a while loop that asks the user for a number and prints a countdown from that number to zero.		
<b>UNIT – 06</b>	Write a Python Program to add matrices. Write a Python program to multiply matrices.		
<b>UNIT – 07</b>	Write a Python program to check if a string is palindrome or not.		
<b>UNIT – 08</b>	Write a Python program to Extract Unique values dictionary values		
<b>UNIT – 09</b>	Write a Python program to read file word by word Write a Python program to Get number of characters, words.		
<b>UNIT – 10</b>	Write a Python program for Linear Search		

## FABRIC MANUFACTURE - I - TW

<b>Subject Code 2028311</b>	<b>Term Work</b>			<b>No of Period in one session:</b>			<b>Credits  01</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal (PA)</b>	<b>:</b>	<b>25</b>	
	—	—	<b>02</b>	<b>External (ESE)</b>	<b>:</b>	<b>07</b>	

### Contents:Term Work

<b>List of Term Work: -</b>		<b>Hrs.</b>	<b>Marks</b>
<b>Unit -1</b>	<b><u>PRIMARY MOTIONS:</u></b> 5.1 Detailed study of primary motions 5.1.1 Shedding 5.1.2 Picking 5.1.3 Beat Up 5.2 Dismantling and resetting of the parts of the above motions. 5.3 Sketching the above motion parts.		
<b>Unit -2</b>	<b><u>SECONDARY MOTIONS:</u></b> 6.1 Detailed study of secondary motions 6.1.1 Take Up Motion (5 wheels and 7 wheels) 6.1.2 Let Off Motion 6.2 Dismantling and resetting of the parts of the motions. 6.3 Sketching the above motion parts.		
<b>Unit -3</b>	<b><u>TERTIARY MOTIONS:</u></b> 7.1 Detailed study of the tertiary motions 7.1.1 Weft Fork Motion 7.1.2 Warp Protecting Motion (Loose reed & fast reed) 7.2 Dismantling and resetting of the above motions. 7.3 Sketching the above motion parts.		
<b>Unit -4</b>	<b><u>LOOMS:</u></b> 8.1 Study the handloom and practice of weaving on them. 8.2 Study the Power loom and practice of weaving on them.		