

**STATE COUNCIL FOR TECHNICAL EDUCATION AND VOCATIONAL TRAINING, ODISHA**

**TEACHING AND EVALUATION SCHEME FOR 3rd Semester Textile Technology/ Engg.(wef 2019-20)**

Subject Number	Subject Code	Subject	Periods/week			Evaluation Scheme			
			L	T	P	Internal Assessment/ Sessional:	End Sem Exams	Exams (Hours)	Total
<b>Theory</b>									
Th.1		Fibre Science	3			20	80	3	100
Th.2		Yarn Manufacture-I	3			20	80	3	100
Th.3		Fabric Manufacture -I	3			20	80	3	100
Th.4		Textile Chemical Processing-I	3			20	80	3	100
Th.5		Environmental studies	4			20	80	3	100
		<i>Total</i>	16			100	400	-	500
<b>Practical</b>									
Pr.1		Yarn Manufacture-I Lab	-		5	25	25	3	50
Pr.2		Fabric Manufacture -I Lab	-		6	25	50	3	75
Pr.3		Textile Chemical Processing-I	-		5	25	50	3	75
Pr.4		Workshop Practice-II			4	25	25	3	50
		Student Centred Activities(SCA)			3	-	-	-	-
		<i>Total</i>	-		18	100	150	-	250
		<b>Grand Total</b>	<b>16</b>	<b>-</b>	<b>23</b>	<b>200</b>	<b>550</b>	<b>-</b>	<b>750</b>

Abbreviations: L-Lecturer, T-Tutorial, P-Practical . Each class is of minimum 55 minutes duration

Minimum Pass Mark in each Theory subject is 35% and in each Practical subject is 50% and in Aggregate is 40%

**SCA shall comprise of Extension Lectures/ Personality Development/ Environmental issues /Quiz /Hobbies/ Field visits/ cultural activities/Library studies/Classes on MOOCS/SWAYAM etc., Seminar and SCA shall be conducted in a section.**

**There shall be 1 Internal Assessment done for each of the Theory Subject. Sessional: Marks shall be total of the performance of individual different jobs/ experiments in a subject throughout the semester**

# Th1. FIBRE SCIENCE

<b>Name of the Course: Diploma in Textile Technology /Engineering</b>			
<b>Course Code:</b>	<b>TH-1</b>	<b>Semester:</b>	<b>3<sup>rd</sup></b>
<b>Total Period:</b>	<b>45</b>	<b>Examination:</b>	<b>3hours</b>
<b>Theory Periods:</b>	<b>3P/Week</b>	<b>Internal Assessment:</b>	<b>20</b>
<b>Maximum Marks:</b>	<b>100</b>	<b>End Semester Examination</b>	<b>80</b>

## A. Rationale :

Fibres are the basic raw materials for the manufacture of yarns and fabrics. The quality characteristics of the yarns and fabrics depend on types of fibres used and their properties. Therefore, it is important to study the different types of fibre. Different fibres exhibit different physical and chemical properties. This is due to a number of factors like the material of the fibre, its molecular structure, length and the amount of draft applied during spinning process. Fabrics are made from different types of fibres and their blends are put into specific uses such as summer wear, winter wear, industrial wear etc., depending on their particular properties. Therefore it is very important for a Textile student to acquire knowledge about the sources and extraction/ manufacturing process of different types of natural and man-made fibres.

## B. Objectives:

1. To understand the Textile fibre, the essential and desirable properties of textile fibre forming polymer. classifications of textile fibres, their origin, chemical nature etc.
2. To study the chemical composition, structure , physical and chemical properties of natural fibres i.e Cotton, Flax, Jute, Ramie, Hemp, Pineapple fibres, Wool and Silk fibres and their uses.
3. To know about the Indian & hybrid cotton varieties and their uses.
4. To acquire knowledge about the manufacturing process of man-made fibres i.e Viscose rayon, Nylon 6, Nylon 66, polyester, Acrylic fibres and their properties & uses.
5. To know about Tencel, Layocell, Modal, Polynosic rayon and HT rayon.
6. To study the mineral and high performance fibres.

## C. Topic wise distribution of periods

Sl. No	Topics	Period
01	Fundamental Concept	10
02	Natural fibre	15
03	Man-made fibre	15
04	Mineral & High performance fibre	05
<b>Total:</b>		<b>45</b>

## D. Course Contents:

### 1. Fundamental Concept

- 1.1 Basic concept on Polymer and classification.
- 1.2 Degree of polymerization.

- 1.3 Brief idea on different polymerization methods.
- 1.4 Features of fibre forming polymers
- 1.5 Concept of fibre & Classification of textile grade fibres.
- 1.6 Concept of staple fibre and filament.
- 1.7 State the essential & desirable properties of Textile grade fibre.

## 2. Natural fibres

- 2.1 Brief idea of extraction of fibres from their natural resources like- cotton, silk, jute etc.
- 2.2 Morphological structure of Cotton, silk, wool and Jute fibres
- 2.3 Physical, Chemical Properties of natural fibres like- Cotton, wool, Silk, jute etc. and end uses.
- 2.4. Identification of natural fibres by physical & chemical processes.

## 3. Man-made fibre

- 3.1 State the principles of Melt, Wet & Dry Spinning.
- 3.2 Describe the manufacturing process & properties of Viscose rayon fibre from wood pulp.
- 3.3 Concept of high tenacity viscose rayon.
- 3.4 Brief idea on secondary & triacetate acetate rayon fibre.
- 3.5 Describe manufacturing Process flow chart, Properties & end uses of – Nylon6, Nylon 6,6, Polyester, Acrylic & Mod-acrylic etc.

## 4. Mineral & High performance fibre

- 4.1 Describe the properties and end uses of – poly propylene, Poly ethylene, Spandex, Carbon, Aramid fibres, Glass, PBI etc.

<b>Learning Resources:</b>			
<b>Sl No</b>	<b>Title of the Book</b>	<b>Name of Authors</b>	<b>Name of Publisher</b>
01	Hand Book of Textile fibre, Vol. I and II	Cook Gordon J	Woodhead Fibre Science Series, UK, 1984
02	Hand Book of Fibre Chemistry	Ed. M Lewin and E M Pearce	Mercel Dekker Inc., 1998
03	Textile Fibre	Shenai V A	Sevak Publications, Mumbai
04	Progress in textiles, Science and Technology Vol.-2	Dr. V.K. Kothari	I.I.T. Delhi
05	Polymer Science	Gowariker V R, Viswanathan N V and Sridhar J	New Age International Ltd., New Delhi, 1996
06	Fibre Science and Technology	Dr. S P Mishra	New-Age International Ltd., New Delhi, 1996
07	Manmade Fibres	R.W. Moncrieff	Butterworth, London
08	Production of Synthetic Fibres	Vaidya A A	Prentice Hall of India, New Delhi, 1988

## Th2. Yarn Manufacture- I

<b>Name of the Course: Diploma in Textile Technology /Engineering</b>			
<b>Course Code:</b>	<b>TH-2</b>	<b>Semester:</b>	<b>3<sup>rd</sup></b>
<b>Total Period:</b>	<b>45</b>	<b>Examination:</b>	<b>3hours</b>
<b>Theory Periods:</b>	<b>3P/Week</b>	<b>Internal Assessment:</b>	<b>20</b>
<b>Maximum Marks:</b>	<b>100</b>	<b>End Semester Examination</b>	<b>80</b>

### A. Rationale :

The student of textile technology after completion his diploma has to work in textile industries. Fibres has to be converted to yarn form to be used as raw materials for formation of fabrics for different end uses. Hence, a textile student should know the manufacturing process of yarn. In this subject students will be taught about the initial process i.e Ginning, Blow-room and Carding process for preparation of short staple fibres required for formation of yarn

### B. Objectives:

1. Basic concept of conversion of staple fibres to yarn.
2. Ginning process for extraction of seeds from cotton fibres and working principle of machineries used and required process parameters.
3. The sequence of machines used in Blow room lines and the mechanism for opening, cleaning of fibres and conversion of them into suitable strand forms for easy transportation to subsequent stages of Carding process.
4. Processing of different types of fibres and their blends in Blow-room.
5. Objects of Carding process, theory of carding engine, passage of materials through carding machine and operational principle of various components of Carding engine.
6. Parameters required for processing fibres in carding engine and their influence on yarn quality.
7. Maintenance schedules of various machineries.

<b>C. Topic wise distribution of periods</b>		
<b>Sl. No</b>	<b>Topics</b>	<b>Period</b>
01	Ginning	05
02	Mixing &Blending	10
03	Blow Room	15
04	Carding	15
<b>Total:</b>		<b>45</b>

### D. Course Contents:

#### 1. Ginning

- 1.1 State the purpose of ginning.
- 1.2 Describe working principles of roller, McCarthy & Saw Gin, Baling.

#### 2. Mixing &Blending

- 2.1 Objects of Mixing.
- 2.2 General consideration for preparation of cotton mixing & scientific bale management.
- 2.3 Methods of mixing and blending.

### 3. Blow Room

3.1 Principal action in opening and cleaning.

3.2 Study of various types of machinery arranged in the sequence of a single process Blowroom Line  
for the various type of mixing.

3.3 Study of various openers & cleaners like Mixing bale opener, unifloc, blendomat, monocylinder,  
axiflow cleaner, uniclean, CVT, etc.

3.4 Concept of measuring of opening and cleaning efficiency of different opener and cleaner.

3.5 Method of dust extraction in Blow Room.

3.6 Study of lap forming unit and chute feed mechanism and their comparison .

3.7 Process parameters of Blow Room.

3.8 Waste control in Blow Room.

3.9 Calculation relating to production , efficiency of machines & Maintenance schedules.

### 4. Carding

4.1 Objects of Carding.

4.2 Constructional features of Carding Machine.

4.3 Principles of carding & stripping actions.

4.4 Study of different parts and function of a Carding Machine.

4.5 Settings and gauging of different parts of Carding Machine.

4.6 Calculation of production, speed, draft etc related to carding machine. calculation in card ,  
Mechanical and Actual draft.

4.7 Study of card clothing :- metallic wire geometry of licker-in, cylinder, flat and doffer wire.

4.8 Mechanics of fibre entanglement , fibre transfer during carding, neps and hook formation  
and its

effect on yarn quality. Card waste –types and control.

4.9 Defects in card Sliver and their causes and remedies. Maintenance schedules and Study of  
the  
function of Auto leveller in Card.

<b>Learning Resources:</b>			
<b>SI No</b>	<b>Title of the Book</b>	<b>Name of Authors</b>	<b>Name of Publisher</b>
01	The Technology of Short-staple Spinning	Klein W	The Textile Institute, Manchester
02	A Practical Guide to Opening and Carding	Klein W	The Textile Institute, Manchester
03	Spun Yarn Technology	Oxtoby E	Butter worth's, London, New Edition 2002
04	Manual of Cotton Spinning Vol-II	Textile Institute, Manual	Textile Institute

### Th3. Fabric Manufacture-I

<b>Name of the Course: Diploma in Textile Technology /Engineering</b>			
<b>Course Code:</b>	<b>TH-3</b>	<b>Semester:</b>	<b>3<sup>rd</sup></b>
<b>Total Period:</b>	<b>45</b>	<b>Examination:</b>	<b>3hours</b>
<b>Theory Periods:</b>	<b>3P/Week</b>	<b>Internal Assessment:</b>	<b>20</b>
<b>Maximum Marks:</b>	<b>100</b>	<b>End Semester Examination</b>	<b>80</b>

#### A. Rationale :

A basic knowledge about the different processes like cone winding, pirn winding, warping, sectional warping, sizing, drawing-in and denting are essential for the students to understand the sequence of operations in the weaving preparatory processes and also principle of weaving mechanism.. Hence they must be taught to the students to enhance their knowledge and skill in the setting and operation of the preparatory machines, to perform necessary weaving preparatory calculations and also fundamental concept of mechanism for formation of fabric.

**B. Objective :** After completion of this subject the students will able to

1. To know the objective of winding.
2. To know about different types of Tensioning devices and their uses.
3. To understand about yarn clearers and package faults.
4. To know about High speed warping machine, salient features –Faults on.
5. To understand about, Sizing ingredients, their functions and importance.
6. To understand about the Sizing process and various controls.
7. To know about plain power loom – primary mechanisms – timings, settings
8. To know about plain power loom – secondary mechanisms – timings, settings
9. To know about Drawing-in Denting, yarn numbering systems and understand various calculations of winding , warping and sizing.

<b>C. Topic wise distribution of periods</b>		
<b>Sl. No</b>	<b>Topics</b>	<b>Period</b>
01	Winding	15
02	Warping	10
03	Sizing & Drawing	15
04	Basic Mechanism of Loom (weaving)	05
<b>Total:</b>		<b>45</b>

#### D. Course Contents:

##### 1. Winding

- 1.1 Objects of warp and weft winding.
- 1.2 Types of winding (precession & non precession).
- 1.3 Features of warp and weft winding machine(anti patterning device, knotters, splicers, electronic clearers, slub catchers, yarn tensioners, waxing, different types of traverse mechanisms).
- 1.4 Classification of yarn faults ,Package defects and their remedies.

- 1.5 Modern developments in winding machine.
- 1.6 Calculations related to winding (related to traverse ratio, winding angle, winding speed, yarn tensioner, production of machines.)

## 2. Warping

- 2.1 Objects of warping.
- 2.2 Types of warping machine (direct and sectional).
- 2.3 Explain passage of yarns through High Automatic beam warping.
- 2.4 Features of high speed direct and sectional warper (types of creel, stop motions, tensioners, different mechanisms at head stock).
- 2.5. Package defects and their remedies.
- 2.6 Recent developments in warping machine.
- 2.7 Calculations related to warping

## 3. Sizing & Drawing

- 3.1 Objects of sizing, Sizing ingredients-- their properties and functions.
- 3.2 Preparation of size paste—formulation, cooking equipment and storing.
- 3.3 Slasher sizing machine – general description ,Different types of creel, Design of size box ,heating and temperature control, level control, immersion rollers and squeeze rollers, wet splitting.
- 3.4 Application of size of cotton warp (types of sizing, factors governing pick up of size)
- 3.5 Drying equipments (cylinder drying, hot air drying, radiation drying, cooling of warp sheet, single end sizing).
- 3.6 The head stock (dry splitting, beam pressing roller, measuring and marking motions).
- 3.7 Tension on warp sheet and its control (factors governing tension, methods of measuring stretch, control of stretch).
- 3.8 Modern developments in sizing.
- 3.9 Brief idea on drawing & denting.

## 4. Basic Mechanism of Loom

- 4.1 Explain passage of yarns through plain looms.
- 4.2 Define and Describe Shedding.
- 4.3 Classify & Explain Type of shedding devices and Type of Sheds.
- 4.4 Describe tapper shedding.
- 4.5 Describe Picking and checking mechanism.
- 4.6 Explain Beating up mechanism.
- 4.7 State Timing and setting of shedding, picking and beating,
- 4.8 Different basic calculation related to loom.

<b>Learning Resources:</b>			
<b>SI No</b>	<b>Title of the Book</b>	<b>Name of Authors</b>	<b>Name of Publisher</b>
01	Winding	BTRA Monograph Series	Bombay Textile Research Association, Bombay, 1981.
02	Warping and Sizing		
03	Weaving – Machine, Mechanism and Management	Talukdar M K, Sriramulu P K and Ajsaokar D B	Mahajan Publisher Private Ltd., Ahmedabad, India, 1998

04	Textile Mathematics Vol.II& III	Booth J E	Textile Institute, Manchester, 1977
05	Sizing: Materials, Methods, Machines	Ajgaonkar D.B, Talukdar M.K. Wadekar	
06	Yarn Preparation", Vol. I & II	Sengupta R	Popular Prakasam, Bombay, 1970
07	Weaving – Conversion of Yarn to Fabric	Lord P.R. and Mohammed M.H	Merrow Publication, 2001



## Th4. Textile Chemical Processing-I

<b>Name of the Course: Diploma in Textile Technology /Engineering</b>			
<b>Course Code:</b>	<b>TH-4</b>	<b>Semester:</b>	<b>3<sup>rd</sup></b>
<b>Total Period:</b>	<b>45</b>	<b>Examination:</b>	<b>3hours</b>
<b>Theory Periods:</b>	<b>3P/Week</b>	<b>Internal Assessment:</b>	<b>20</b>
<b>Maximum Marks:</b>	<b>100</b>	<b>End Semester Examination</b>	<b>80</b>

### A. Rationale :

A diploma holder in Textile Technology must have the requisite knowledge and skill about Chemical processing of textiles i.e. bleaching, printing and finishing etc. Hence, this subject is designed to teach students about the various processes involved in dyeing of textiles.

### B. Objective :

After completion of this subject the students will able to

1. understand the various processes required to prepare the fabric for dyeing of textiles.
2. learn about process of Bleaching.
3. learn different types of Dyes and their applications on fabric
4. learn about various machineries used in wet processing.

<b>C. Topic wise distribution of periods</b>		
Sl. No	Topics	Period
01	Dry Processing	05
02	Desizing	05
03	Scouring	15
04	Bleaching	10
05	Dyeing & Wet Processing M/C	10
<b>Total:</b>		<b>45</b>

### D. Course Contents:

#### 1. Dry Processing

- 1.1 Pre-cleaning, Mending, Stamping, stitching , Shearing and cropping.
- 1.2 Brief idea on Shearing and cropping M/c.
- 1.3 Singeing, Different methods of singeing (Plate, Roller and Gas Singeing), drawbacks and advantages.

#### 2. Desizing

- 2.1 Object, types, method details and mechanism of removal of starch.
- 2.2 Efficiency of desizing,

#### 3. Scouring

- 3.1 Objectives, mechanism of removal of impurities, recipe and controlling parameters.
- 3.2 Scouring of textile & evaluation of scouring efficiency.

- 3.3 Scouring of natural, man-made and blended textiles.
- 3.4 Degumming of silk.
- 3.5 Classification of Kier & working mechanism of Industrial Kier.
- 3.6 Souring.

#### 4. Bleaching

- 4.1 Objectives of bleaching & classification of bleaching agents.
- 4.2 Mechanism of Hypochlorite, peroxide and chlorite bleaching.
- 4.3 Field of application - Bleaching of cotton, silk, wool, and man-made blended textiles by suitable bleaching agents.
- 4.4 Principles and application of optical brightening and blueing agents.

#### 5. Dyeing & Wet processing M/C

- 5.1 Classify dyes and pigments used in textile industry.
- 5.2 Compare between natural and synthetic dyes.
- 5.3 Explain general properties of dyes (solubility, affinity toward, Properties)
- 5.4 State the principles of dyeing.
- 5.5 Dyeing of textiles of natural fibres [ (Cotton by direct, reactive, vat, azoic & sulphur), (Silk and Wool by acid dye).
- 5.6 Working principles of Winch, Jet, Beam, Hank and Package dyeing machine, Jigger, J-Box

<b>Learning Resources:</b>			
<b>SI No</b>	<b>Title of the Book</b>	<b>Name of Authors</b>	<b>Name of Publisher</b>
01	Textile Chemistry, Part-I & II	R.H. Peters	Elsevier
02	Chemical Technology of Scouring and Bleaching	E. R. Trotman	Elsevier
03	Technology of Bleaching and Mercerisation	V.A. Shenai	Sevak Publication
04	Technology of Dyeing	V.A. Shenai	Sevak Publication
05	The Dyeing of Synthetic Polymer and Acetate Fibres	Nunn D M	Dyers Company Publication Trust, London (1979).
06	Chemical Processing of polyester / cellulosic Blends	Mittal R M and Trivedi S S	Ahmedabad Textile Industries Research Association, Ahmedabad, India (1983).

## Th5. Environmental Studies

(Common to All Branches)

<b>Name of the Course: Diploma in Textile Technology /Engineering</b>			
<b>Course Code:</b>	<b>TH-5</b>	<b>Semester:</b>	<b>3<sup>rd</sup></b>
<b>Total Period:</b>	<b>60</b>	<b>Examination:</b>	<b>3hours</b>
<b>Theory Periods:</b>	<b>4P/Week</b>	<b>Internal Assessment:</b>	<b>20</b>
<b>Maximum Marks:</b>	<b>100</b>	<b>End Semester Examination</b>	<b>80</b>

### A. Rationale:

Due to various aspects of human developments including the demand of different kinds of technological innovations, most people have been forgetting that, the Environment in which they are living is to be maintained under various living standards for the preservation of better health. The degradation of environment due to industrial growth is very much alarming due to environmental pollution beyond permissible limits in respect of air, water industrial waste, noise etc. Therefore, the subject of Environmental Studies to be learnt by every student in order to take care of the environmental aspect in each and every activity in the best possible manner.

### B. Objectives:

After completion of study of environmental studies, the student will be able to:

1. Gather adequate knowledge of different pollutants, their sources and shall be aware of solid waste management systems and hazardous waste and their effects.
2. Develop awareness towards preservation of environment.

<b>C. Topic wise distribution of periods</b>		
<b>Sl. No</b>	<b>Topics</b>	<b>Period</b>
01	The Multidisciplinary nature of environmental studies	04
02	Natural Resources	10
03	Systems	08
04	Biodiversity and it's Conservation	08
05	Environmental Pollution	12
06	Social issues and the Environment	10
07	Human population and the environment	08
<b>Total:</b>		<b>60</b>

### D. Course Contents:

#### 1. The Multidisciplinary nature of environmental studies

1.1 Definition, scope and importance, Need for public awareness.

#### 2. Natural Resources

##### 2.1 Renewable and non renewable resources:

2.1.1 Natural resources and associated problems.

2.1.2 Forest resources: Use and over-exploitation,

deforestation, case studies,  
Timber extraction mining, dams and their effects on forests  
and tribal people.

2.1.3 Water resources: Use and over-utilization of surface and  
ground water, floods, drought, conflicts over water, dam's  
benefits and problems.

2.1.4 Mineral Resources: Use and exploitation, environmental  
effects of extracting and using mineral resources.

2.1.5 Food Resources: World food problems, changes caused  
by agriculture and over grazing, effects of modern  
agriculture, fertilizers- pesticides problems, water  
logging, salinity,.

2.1.6 Energy Resources: Growing energy need, renewable  
and non-renewable energy sources, use of alternate  
energy sources, case studies.

2.1.7 Land Resources: Land as a resource, land degradation, man  
induces landslides, soil erosion, and desertification.

2.2 Role of individual in conservation of natural resources.

2.3 Equitable use of resources for sustainable life styles.

### 3. Systems

3.1 Concept of an eco system.

3.2 Structure and function of an eco system.

3.3 Producers, consumers, decomposers.

3.4 Energy flow in the eco systems.

3.5 Ecological succession.

3.6 Food chains, food webs and ecological pyramids.

3.7 Introduction, types, characteristic features, structure and function

of

the following eco System,

3.8 Forest ecosystem:

3.9 Aquatic eco systems (ponds, streams, lakes, rivers, oceans, estuaries).

### 4. Biodiversity and it's Conservation

4.1 Introduction-Definition: genetics, species and ecosystem diversity.

4.2 Biogeographically classification of India.

4.3 Value of biodiversity: consumptive use, productive use, social ethical,  
aesthetic and optin values.

4.4 Biodiversity at global, national and local level.

4.5 Threats to biodiversity: Habitats loss, poaching of wild life, man wildlife  
conflicts.

### 5. Environmental Pollution.

5.1 Definition Causes, effects and control measures of:

- a) Air pollution.
- b) Water pollution.
- c) Soil pollution
- d) Marine pollution

- e) Noise pollution.
- f) Thermal pollution
- g) Nuclear hazards.

5.2 Solid waste Management: Causes, effects and control measures of urban and industrial wastes.

5.3 Role of an individual in prevention of pollution.

5.4 Disaster management: Floods, earth quake, cyclone and landslides.

## 6. Social issues and the Environment

6.1 Form unsustainable to sustainable development.

6.2 Urban problems related to energy.

6.3 Water conservation, rain water harvesting, water shed management.

6.4 Resettlement and rehabilitation of people; its problems and concern.

6.5 Environmental ethics: issue and possible solutions.

6.6 Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies.

6.7 Air (prevention and control of pollution) Act.

6.8 Water (prevention and control of pollution) Act.

6.9 Public awareness.

## 7. Human population and the environment

7.1 Population growth and variation among nations.

7.2 Population explosion- family welfare program.

7.3 Environment and human health.

7.4 Human rights.

7.5 Value education

7.6 Role of information technology in environment and human health.

### Syllabus coverage upto I.A

Units 1, 2, 3

<b>Learning Resources:</b>			
<b>Sl No</b>	<b>Title of the Book</b>	<b>Name of Authors</b>	<b>Name of Publisher</b>
01	Textbook of Environmental studies	Erach Bharucha	#UGC
02	Fundamental concepts in Environmental Studies	, D.D. Mishra	S.Chand & Co-Ltd
03	Text book of Environmental Studies	K.Raghavan Nambiar	SCITECH Publication Pvt. Ltd
04	Environmental Engineering	V.M.Domkundwar	Dhanpat Rai & Co

## Pr1. Yarn Manufacture – I (Lab.)

<b>Name of the Course: Diploma in Textile Technology /Engineering</b>			
<b>Course Code:</b>	<b>Pr-1</b>	<b>Semester:</b>	<b>3<sup>rd</sup></b>
<b>Total Period:</b>	<b>75</b>	<b>Examination:</b>	<b>3hours</b>
<b>Lab. Periods:</b>	<b>5P/Week</b>	<b>Sessional:</b>	<b>25</b>
<b>Maximum Marks:</b>	<b>50</b>	<b>End Semester Examination</b>	<b>25</b>

### A. Rationale :

The student of textile technology after completion his diploma has to work in textile industries. In this subject students will get practical knowledge about the initial process i.e Blow-room and Carding process for preparation of short staple fibres required for formation of yarn

**Objective :**After completion of this subject the students will able to

1. Proper handling & processing of fibres yield a good yarn and ultimately a value added consumer product i.e. fabric.
2. deal with the preliminary concept of yarn manufacturing like- opening, cleaning & individualization.
3. work with Blow room & carding M/Cs and study different setting, maintenance procedure etc.

Experiment No	Topics	Topic wise distribution of periods in hours
01	To study and sketch the passage of materials and mechanism of a Ginning machines.	10
02	To study and sketch general outline of opener, cleaner and mixer/blender employed in Blow-Room line.	10
03	To study the feed regulating mechanism in Blow-Room line.	10
04	To determine the cleaning efficiency of a Blow-room line	5
05	To study and sketch the lap formation unit/chute feed mechanism	5
06	To study and sketch the working mechanism of various operations of a card with respect to flow of materials	10
07	To study and practice different settings of the card	10
08	To study the gearing plan and calculate draft constant, draft and production constant of a Card.	05
09	To study the wire points used in different zone of a card.	05
10	To process fibres in card and produce sliver and find out sliver hank.	05
TOTAL		75

## Pr2. Fabric Manufacture – I (Lab.)

<b>Name of the Course: Diploma in Textile Technology /Engineering</b>			
<b>Course Code:</b>	<b>Pr-2</b>	<b>Semester:</b>	<b>3<sup>rd</sup></b>
<b>Total Period:</b>	<b>90</b>	<b>Examination:</b>	<b>3hours</b>
<b>Lab. Periods:</b>	<b>6P/Week</b>	<b>Sessional:</b>	<b>25</b>
<b>Maximum Marks:</b>	<b>75</b>	<b>End Semester Examination</b>	<b>50</b>

### A. Rationale :

The students to enhance their practical knowledge and skill in the setting and operation of the preparatory machines, to perform necessary weaving preparatory calculations and also fundamental concept of mechanism for formation of fabric.

**B. Objective :**After completion of this subject the students will able to

1. deal with the preliminary concept&working of preparatory machines like- winding, warping , Sizing and basic concept of tappet Loom.
2. work with winding , warping ,Sizing and tappet loom and study different setting, maintenance procedure etc.

<b>Experiment No</b>	<b>Topics</b>	<b>Topic wise distribution of periods in hours</b>
01	To study and sketch the passages of warp through different parts of noneautomatic high speed winding machine.	6
02	To study stop motion device, Ribbon breaker, Tensioner and Slub catcher and their Settings	9
03	To study and sketch passages of warp in warping machine, creel and function of different Parts.	9
04	To study Stop motion , measuring motion, beam pressing device and practice mounting of warper's beam and drive to the warper's beam, defects and remedies	9
05	To study and sketch passage of threads through different parts of the high speed sizing machine, cut motion, sizing defects and remedies.	9
06	To study temperature and level controls, recipes, sizing defects and remedies	6
07	To select the proper reed and heald for a weaver's beam and practice proper drawing-in of warp keeping in mind fabric construction	9
08	To study and sketch passage of warp through different parts of the loom	6
09	To study for identification of various components of loom.	9
10	To study power transmission to different parts of the loom	6
11	To study the mechanism of shedding and picking in a loom.	6

12	To study Beat up mechanism, alignment of stay and boxes for proper shuttle flight	6
TOTAL		90



### Pr3. Textile Chemical Processing-I (Lab.)

<b>Name of the Course: Diploma in Textile Technology /Engineering</b>			
<b>Course Code:</b>	<b>Pr-3</b>	<b>Semester:</b>	<b>3<sup>rd</sup></b>
<b>Total Period:</b>	<b>75</b>	<b>Examination:</b>	<b>3hours</b>
<b>Lab. Periods:</b>	<b>5P/Week</b>	<b>Sessional:</b>	<b>25</b>
<b>Maximum Marks:</b>	<b>50</b>	<b>End Semester Examination</b>	<b>25</b>

#### A. Rationale :

A diploma students will acquire practical knowledge and skill about Chemical processing of textiles i.e. bleaching, printing and finishing etc.

**B. Objective :**After completion of this subject the students will able to

1. deal the basic processes and parameters required before dyeing.
2. work on desizing, scouring bleaching, mercerization and dyeing on different varieties of natural and mane-made fibers, yarns &fabrics.

<b>Experiment No</b>	<b>Topics</b>	<b>Topic wise distribution of periods in hours</b>
01	Desizing of grey cotton yarn/fabric using chemicals/enzyme.	10
02	Scouring of desized cotton yarn/fabric	10
03	Scouring of P/C blended fabrics.	05
04	Bleaching of scoured cotton yarn/fabric with hypochlorite agent	5
05	Bleaching of cotton fabric with hydrogen peroxide	10
06	Mercerization of cotton yarn	05
07	Scouring and Bleaching of Wool.	10
08	Degumming of Silk	05
09	Dyeing of cotton yarn/fabric using direct and reactive dyes and studying and fastness properties.	10
10	Dyeing of cotton yarn/fabric using vat dyes and assessment of fastness properties of dyed material.	05
<b>TOTAL</b>		<b>75</b>

## Pr4. Workshop Practice-II

<b>Name of the Course: Diploma in Textile Technology /Engineering</b>			
<b>Course Code:</b>	<b>Pr-4</b>	<b>Semester:</b>	<b>3<sup>rd</sup></b>
<b>Total Period:</b>	<b>60</b>	<b>Examination:</b>	<b>3hours</b>
<b>Lab. Periods:</b>	<b>4P/Week</b>	<b>Sessional:</b>	<b>25</b>
<b>Maximum Marks:</b>	<b>50</b>	<b>End Semester Examination</b>	<b>25</b>

### A. Rationale :

A diploma students will acquire practical knowledge and skill about basic work shop i.e. machine shop, Foundry, smithy and welding etc.

**B. Objective :**After completion of this subject the students will able to

- 1.handle to operate preliminary processes required for the final end product .
- 2.work on Machine shop, foundry shop, smith shop and welding shop and prepare jobs.

<b>Experiment No</b>	<b>Topics</b>	<b>Topic wise distribution of periods in hours</b>
01	Machine Shop	20
02	Foundry Shop	10
03	Smithy Shop	15
04	Welding Shop	15
TOTAL		60

### MACHINE SHOP

1. Study on different types of machine tools, their functions, different tools used and general safety precaution to be observed.
2. Study a centre lathe.
3. Operate a center lathe on a cylindrical of and perform following Operations turning, taper turning, facing, parting, knurling, chamfering.
4. Operate a drill machine to perform drilling and counter boring operations on a job.
5. Observe milling, shaping and grinding operations during demonstration at shop floor.

### FOUNDRY SHOP

1. Prepare a simple wooden pattern and green mould.

### SMITHYSHOP

1. Study different tools used in forging.
2. Make a hexagonal chisel.
3. Prepare a door ring.

### WELDING SHOP

1. Observe demonstration of different type of welding electrodes.
2. Prepare a butt joint and lap joint using Arc welding.
3. Study different equipments and tools in gas welding.
4. Prepare a lap joint using gas welding.

**Reference books:**

1. work shop practice----R S khurmi&gupta, SChand publication
2. Workshop Technology—II, Hazra& Choudhury

**List of Machineries /Equipments for Textile Tech/Engg****Third Semester**

SI No	Name of Machineries /Equipments	Required No
01	Miniature Blow room line	01unit
02	Carding Engg	01no
03	Cone/Cheese winding M/c(10 heads)	01no
04	Automatic pirn winding M/c (4 spindles)	01no
05	Beam/ sectional warping M/c	01no
06	Two cylinder sizing M/c	01no
07	Water bath (six holes)	05 nos
08	Beaker Dyeing M/C	01no
09	Hydro-extractor	01no
10	Padding mangle	01no
11	Jigger Dyeing M/C	01no
12	Winch Dyeing M/C	01no