

19TT101

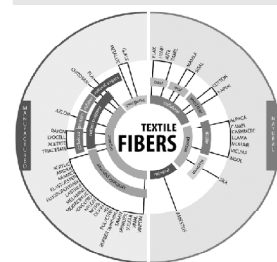
TEXTILE FIBRES

Hours Per Week :

L	T	P	C
3	-	2	4

Total Hours :

L	T	P	W/RA	SSH/SHS	CS	SA	S	BS
45	-	30	25	50	-	-	5	5



*Source: Classification of Textile Fibers by Dr. P. K. S. Choudhary

SOURCE:

<http://gpktt.weebly.com/classification-of-textile-fibers.html>

COURSE DESCRIPTION AND OBJECTIVES:

This course provides an essential knowledge to study properties and applications of textile fibers. The objective of the course is to introduce stem and leaf fibres such as jute, hemp, flax, banana.

COURSE OUTCOMES:

Upon completion of the course, student will able to achieve the following outcomes:

COs	Course Outcomes	POs
1.	Examine the suitability of any fiber for textile applications	4
2	To find the suitable application of given fiber based on its properties.	2
3	Distinguished the distinct properties of wool and silk.	1
4	Understand the use of natural fibers and its extraction which does not harm to environment	7

SKILLS:

- ✓ To Identify a given natural textile fibers.
- ✓ Value addition of silk fibre.
- ✓ To identify a given manmade textile fibers.

ACTIVITIES:

- o *Observation of cross section of various fibres under microscope.*
- o *Tabulation for comparative analysis of properties of different fibre.*
- o *Collection of different natural and manmade fibres*
- o *Chemical retting of raw jute fibre*
- o *Mechanical extraction of leaf fibres using mechanical beater*

UNIT - I**L-9**

INTRODUCTION TO TEXTILES : Textile elements defined, Scope of Textiles in various fields, Classification of textile fibers; Specification for fibres & Yarns: Introduction to count systems, conversion within and between different count systems; Theories of fiber structure & elements to define the structure: Micellar theory, continuous theory, fringed micelles theory, fringed fibrils theory, modified fringed micellar theory, requirements for fibre formation.

UNIT - II**L-9**

CHARACTERISATION TECHNIQUES : Interpretation of results of X-Ray diffraction, IR, NMR, Thermal Analysis; Physical and chemical properties of textile fibers: need, significance brief note on Optical microscopy, Electron microscopy, Scanning Electron microscopy.

COTTON : Types of Cotton, morphology and physical properties of cotton, Chemical Properties of Cotton, conversion of cotton fibre to fabric; brief note on organic, GM or BT, Never Dried Cotton.

UNIT-III**L-9**

WOOL : Brief note on types of wool, Morphology and Physical and Chemical Properties of wool, Brief study on frictional properties of wool, heat of wetting, warmth of wool, conversion of wool fibre to woollen and worsted yarns.

BAST FIBRES : JUTE-Retting methods, Properties of Jute, Jute as an apparel, conversion of fibre to fabric; brief note on Linen, Hemp, Sisal: Properties and applications.

UNIT - IV**L-9**

SILK : Introduction to silk, Types of Silk, Sericulture and Moriculture, Terminology in Silk, Brief note on Mulberry cultivation, Pests and Diseases; Life cycle of silk worm; Grianage Centers, Introduction to rearing of silk, cocoon stifling (Methods), Storage, Sorting, cooking, brushing, reeling (Methods and Machines), degumming and weighting – Morphology and properties of silk, A brief study on types of silk Yarns and fabrics, Flow sheet of the manufacture of spun silk.

UNIT – V**L-9**

IDENTIFICATION OF TEXTILE FIBRES : By Microscopic Examination, Physical and Chemical Means- Comparison of Cotton, Wool, Silk, Linen and Jute for common properties.

INTRODUCTION TO UNCONVENTIONAL NATURAL FIBRES : Need, scope, fibers from bacteria, deodorant fiber, fiber from Spider silk, Alginate, Paper/bamboo, Starch, Banana fibre, Maize fibre, Coir fibre.

LABORATORY EXPERIMENTS**LIST OF EXPERIMENTS****TOTAL HOURS-30**

1. Microscopic test of fibers.
2. Burning test of fibers.
3. Chemical test of fibers.
4. Feel test of fibers.
5. Determination of fibres in P/C blended yarn using phenol method.
6. Determination of fibres in P/C blended yarn using sulphuric acid.
7. Identification of specific manmade fiber out of different manmade fibers.
8. Identification of specific natural fiber out of different natural fibers.
9. Determination of specific cellulosic fiber out of different cellulosic fibers.
10. Determination of specific protein fiber out of different protein e fibers.
11. Identification fibre from standard FTIR spectra of textile fibers.
12. Determination of fibres in P/V blended yarn using phenol method.
13. Determination of fibres in P/V blended yarn using sulphuric acid.
14. Identification of unknown fibre using chemical test.
15. Observing of FTIR spectra of modified fibres

TEXT BOOKS:

1. Gohl&Vilensky, "Textile Science", Mahajan Book Publishers, Ahmedabad, 2nd ed., 2003.
2. SreenivasaMurthy,H V Textile Fibres, Woodhead Publishers , New Delhi , 2017.
3. J.Gordon Cook, "Hand Book of Textile Fibers", Wood Head Publishers, London, Vol 1 & 2, 2005.

REFERENCE BOOKS:

- 1 S. P. Mishra, "Fibre Science and Technology", New Age International Publishers, New Delhi, 2000.
2. Tammanna& N. Sonwalkar, "Handbook of Silk Technology", Wiley Eastern Limited, New Delhi, 2002.
3. Shenai,VA,Technology of Textile Processing-Textile Fibers, Sevak Publication, Mumbai. 2004.
4. Bernard P and Corbmann Textile Fiber to Fabric, McGraw-Hill International Education, 2001.

