



# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

## Name of Program: B.TECH (Textile Engineering)

SUBJECT CODE	CATEGORY	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
ML301	ODS	ENVIRONMENT AND ENERGY STUDIES	60	20	20	0	0	4	0	0	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

\*Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

### Course Educational Objectives (CEOs):

1. To understand sources of information required for addressing environmental challenges
2. To identify a suite of contemporary tools and techniques in environmental informatics
3. To apply literacy, numeracy and critical thinking skills to environmental problem-solving

### Course Outcomes (COs):

Students will be able:

1. To apply the principles of ecology and environmental issues that apply to air, land and water issues on a global scale.
2. To develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
3. To demonstrate ecology knowledge of a complex relationship between predators, prey, and the plant community.

### Course Contents:

#### Unit I

**Environmental Pollution and Control Technologies:** Environmental Pollution & Control: Classification of pollution, Air Pollution: Primary and secondary pollutants, Automobile and industrial pollution, Ambient air quality standards. Water pollution: Sources and types, Impacts of modern agriculture, degradation of soil. Noise Pollution: Sources and Health hazards, standards, Solid Waste management composition and characteristics of e - Waste and its management. Pollution control technologies: Wastewater Treatment methods: Primary, Secondary and Tertiary.

#### Unit II

**Natural Resources:** Classification of Resources: Living and Non - Living resources, water resources: use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problem, Mineral resources: use and exploitation,

  
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environmental effects of extracting and using mineral resources, Land resources: Forest resources, Energy resources: growing energy needs, renewable energy source, case studies..

### Unit III

**Ecosystems:** Definition, Scope and Importance ecosystem. Classification, Structure and function of an ecosystem, Food chains, food webs and ecological pyramids. Energy flow in the ecosystem, Biogeochemical cycles, Bioaccumulation, ecosystem value, devices and carrying capacity, Field visits.

### Unit IV

**Biodiversity and its Conservation:** Introduction - Definition: genetic, species and ecosystem diversity. Bio-geographical classification of India - Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values - . Biodiversity at global, National and local levels. - . India as a megadiversity nation - Hotspots of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, man/wildlife conflicts; Conservation of biodiversity: In-situ and Exsitu conservation. National biodiversity act.

### Unit V

**Environmental Policy, Legislation & EIA:** Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio- economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan(EMP)

### References:

1. Agarwal, K.C.,(latest edition).Environmental Biology, Bikaner :Nidi Pub. Ltd.,
2. Brunner R.C.(latest edition) Hazardous Waste Incineration, McGraw Hill Inc.
3. Clank R.S. .,(latest edition. Marine Pollution, Clanderson Press Oxford (TB).
4. Environmental Encyclopedia, Jaico Pub. Mumbai,
5. De A.K(latest edition) Environmental Chemistry, Wiley Western Ltd.
6. ErachBharucha(2005).Environmental Studies for Undergraduate Courses by for University Grants Commission.
7. R. Rajagopalan(2006).Environmental Studies. Oxford University Press.
8. M. AnjiReddy(2006).Textbook of Environmental Sciences and Technology. BS Publication.
9. Richard T. Wright(2008).Enviromental Science: towards a sustainable future PHL Learning Private Ltd. New Delhi.
10. Gilbert M. Masters and Wendell P. Ela .(2008).Environmental Engineering and science. PHI Learning Pvt Ltd.

  
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11. Daniel B. Botkin & Edwards A. Keller (2008). Environmental Science Wiley INDIA edition.
12. Anubha Kaushik (2009). Environmental Studies. New age international publishers.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTTX301	DCS	FIBRE SCIENCE - I	60	20	20	0	0	3	1	0	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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### Course Educational Objectives (CEOs):

1. To provide the knowledge of principle and manufacturing process of natural and manmade fibre.
2. To impart the knowledge of various properties of different natural and manmade fibre.
3. To expose the knowledge of structural properties of fibre.

### Course Outcomes (COs)

Student will be able:

1. To explain the correct manufacturing process of various natural and manmade fibre.
2. To identify and evaluate the properties of different natural and manmade fibre accurately.
3. To demonstrate their knowledge on various fibres and their properties.

### Course Contents:

#### Unit I

General classification of fibres. Structure, properties and uses of cotton. Structure, properties and uses of bast fibers, Structure, properties, uses and brief description of wool and silk fibres.

#### Unit II

Basic concept of polymer, their classification, methods of polymerization, molecular weight and its measurement, distribution and importance.

#### Unit III

Manufacturing process of all important man-made fibres e.g. rayon, nylon, polyester, acrylic, poly-olephins etc. with special reference to melt, dry and wet extrusion principle.

  
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Idea about the physical and chemical properties (influence of chemical constituents and different groups present) of above mentioned fibres and their uses.

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## Unit IV

Problems associated with man-made fibres and their methods of rectification. Structure of fibres- basic requirements for fiber formation, concept of order and morphology, molecular packing in crystalline and amorphous regions,

## Unit V

Physical structure of principal natural and man-made fibers. Study of fiber structures & methods of investigating fiber structures e.g. X-ray diffraction, optical and electron microscopy, I R absorption, thermal methods NMR.

## References:

1. **Fibre Science** - Shennai VA
2. **Synthetic Fibre** – Vaidya A A
3. **Manufactured Fibre Technology** - Gupta & V. K. Kothari
4. **Physical Properties of Textile Fibre** - Morton & JWS Hearle
5. **Introduction to Textile Fibre** - Murthy H V S
6. **Fibre Science and Technology** – Ghosh TMH
7. **Man made Fibres** - Moncrieff
8. **Textile Science** - Gohl and Vilensky LD
9. **Polymer Science and Technology** - Fried JR
10. **Advances in Fibre Science** - Mukhopadhyay SK
11. **A text book of Fibre Science & Technology** - Mishra S P
12. **Fibre Science & Technology** - Jayaprakasam et.al
13. **Fibre to Fabric** - Corbman
14. **Fibre2fashion(web)**

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			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTTX302	DCS	YARN MANUFACTURING - I	60	20	20	30	20	3	1	2	5

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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### Course Educational Objectives (CEOs):

1. To identify and evaluate the processing of various fibres on B/R & Cards.
2. To demonstrate their conceptual knowledge to solve the problem in B/R and Card.
3. To investigate the reasons of various problems and their solution in B/R and Card.

### Course Outcomes (COs)

Student will be able

1. To apply their knowledge on the production, processing of various fibers and analyse the problem of various faults occurring in B/R and carding m/c.
2. To apply their knowledge for setting of m/c on the various fibers
3. To solve the reason of various problems and their solution in B/R m/c.
4. To solve the reason of various problems and their solution in carding m/c.

### Course Contents:

#### Unit I

Ginning of cotton fibers, Different types of ginning, roller ginning, saw ginning and importance of the ginning to eliminate the contamination in the yarn, the scenario of Indian ginning industries.

#### Unit II

Blow Room, Objects of blow room. Principles of opening , cleaning and blending . Preparation of uniform lap, principal of blow room machines and blow room lines , recent developments in blow room machinery including automatic bale openers , blenders and chute feed systems, optical color material detectors, dust removal etc. Assessment of blow room performance, environmental condition, man-made fibre processing.

  
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## Unit III

Calculation of blow room production, Process parameters of different machines for different materials, Different settings and speeds, General idea of defects and remedies in blow room, Maintenance schedule and important supervisory check points at blow room.

## Unit IV

Carding – Object of carding, principles of working, construction and working of different parts of the card, type of card clothing, Developments of card wires. Development of modern cards-concept of chute feed, factors influencing the design of carding machines, elements and effect of their speed on carding performance. General idea of speed, setting and their impact on both natural and man – made fibre processing. Assessment of card performance – cleaning efficiency, waste %, production, draft etc. and quality aspects of carded material. Environmental condition, Concept of coiling, General idea of defects and remedies in card.

## Unit V

Characteristics of manmade fibres, blending and objectives, types of blending, processing of manmade fibres in blow room and carding and calculation related to material selection, Idea of fibre distribution in yarns, factors affecting the blend irregularity, Processing of dyed fibres, difficulties in blow room and carding.

### List of Practical (Expand it if needed):

1. An elaborate study of blow room and carding machine.
2. Constructional details, setting & gauging blow room and carding machine.
3. Controls & change position in blow room and carding machine.
4. Calculations of speeds, drafts, production of blow room and carding machine.

### References:

1. Manual of cotton Spinning Vol. I, II. - Text Inst.
2. Element of Raw Cotton and Blow room - Khare A R
3. Elements of Carding and Drawing - Khare A R
4. Processing of Manmade and blends on Cotton System. - Salhotra K R
5. Cotton opening and picking - Gilbert Merrill
6. Cotton carding - Gilbert Merrill
7. Technology of Short Staple Spinning - Klein
8. Practical guide to opening and carding - Klein
9. Spun Yarn Technology, Vol. I Blow room - Venkatasubramani
10. Spun Yarn Technology, Vol. II Carding - Venkatasubramani
11. Essentials of Practical Cotton Spinning - Pattabhiram
12. High Speed Carding & Continuous Card Feeding - Szaloki Z S
13. Technology of Carding - Chattopadhyay R
14. Spinning Processing Methods of Man Made Fibers - Pattabhiram T K

  
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BTTX303	DCS	FABRIC MANUFACTURING - I	60	20	20	30	20	3	1	2	5

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### Course Educational Objectives (CEOs):

1. To describe the working principles of different winding, warping and drawing in process
2. To correctly describe the working principles of sizing m/c.
3. To identify and prepare size paste recipes for natural and synthetic yarns.

### Course Outcomes (COs):

Student will be able:

1. To describe the working principles of different winding m/c and prepare cone or cheese as per the required quality and specifications.
2. To describe the working principles of different warping m/c and prepare warp beam as per the required quality and specifications.
3. To describe the drawing in process.
4. To identify and will prepare size paste recipes for natural and synthetic yarns correctly.

### Course Contents:

#### Unit I

Object of Winding, classification of winding machines. Different types of Winding machines their uses and limitations, tensioning devices, yarn clearers Types and features classification of yarn faults, yarn traversing devices, yarn stop Motion, ribbon formation causes and method of its elimination. Passage of yarn on slow speed and high speed automatic winding machines. Different features of Automatic high speed winding machines, splicing- mechanism and advantages, Related calculations.

  
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## Unit II

Weft Winding - different types, yarn guides and traverse , yarn tension control and Yarn stop motion , auto doffing, bunching, package length and diameter, package Build, winding and binding coil ratio.

## Unit III

Object of warping, classification of warping machines beam warping and sectional Warping measuring motion, stop motions, yarn tensioning, creel types and features, Leasing and beaming, Features of modern high speed warping machines.

## Unit IV

Objects of sizing, method of size preparation, details of slasher sizing and multicylinder sizing machines size ingredients detailed study of various drying systems, measuring and marking motion, drive, and modification of size box, size level control, size viscosity and take-up, moisture, stretch and tension control.

## Unit V

Drawing-in: Manual, automation, knotting and gaiting, Calculations, production, efficiency and waste related to winding and warping processes, Maintenance of the machines studied.

### List of Practical (Expand it if needed):

1. Study of cheese & cone winding m/c,
2. Winding tensions and yarn clearer gauge Levels,
3. Details study of non automatic weft winding machines.
4. Detail study of Warping, adjusting points and Drawing-in operations
5. Detail study of sizing machines.

### References:

1. Winding & Warping - Talukdar M K
2. Modern Preparation and Weaving Machinery - Ormerod A
3. Warping & Sizing - BTRA Silver Jubilee Monograph Series
4. Winding - BTRA Silver Jubilee Monograph Series
5. Weaving Calculation - Sengupta
6. Weaving Technology and Operations - Ormerod & Walter S. Sondhelm

  
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			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTTX304	DCS	TECHNICALTEXTILES – I	60	20	20	0	0	3	1	0	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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### Course Educational Objectives (CEOs):

1. To provide the knowledge about the required properties and manufacturing process of Filter fabrics.
2. To trace the physical and mechanical properties of tire cords.

### Course Outcomes (COs):

Student will be able:

1. To explain the essential requirements of sewing threads.
2. To solve the problems occurred during manufacturing of high performance fibres.
3. To develop the different structure of tire cord & Filter fabrics.
4. To analyze the physical and mechanical behavior of tire cords.
5. To explain the principle & manufacturing process of filter fabrics.

## COURSE CONTENT

### Unit I

**Technical Textiles Overview:** Definition, Market overview, Classification, Application, Future scope to textile industry.

### Unit II

Applications of High Performance Fiber in Technical Textiles: Conventional fibers, high performance fibers, properties, requirement, application of carbon, Aramid, Basalt, HDPE, Glass, PTFE, Ceramics etc.

### Unit III

**Technical Yarns:** Requirements and applications of Technical yarns, Types of technical yarns, Modification of textile yarn structures for functional applications. Different formation methods, Hybrid yarns, Technical sewing threads.

  
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## Unit IV

**Non woven:** Overview of nonwovens, Definitions of nonwovens, Basic nonwoven processes and their sequences. Web formation techniques, types of web bonding, application of non woven fabric .

## Unit V

**Filtration:** Types of filtration, dry filtration, wet filtration, characterization method of filter media, application of different filter media.

## Reference books:

1. **Technical Textiles** - NCUTE Programme Report 2002 - Prof. P.A.Khatwani, S.S.Yardi
2. **Advances in Fibre Science** - S. K. Mukhopadhyay Composite Technologies - Stuart M. Lee
3. **Hand book of nonwovens**, S. J. Russell, Woodhead 2007
4. **Handbook of Technical Textiles**, Anand
5. **Progress in Textile- Volume 3: Technical Textiles** Edited by V.K Kothari
6. **Technical Textile Yarns, 1st edition** , edited by Prof Alagirusamy Apurba Das

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			University Exam	Two Term Exam	Teachers Assessment*	University Exam	Teachers Assessment*				
BTTX305	DCS	CAD IN TEXTILE	0	0	0	0	50	0	0	2	1

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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## Course Educational Objectives (CEOs):

1. To provide the knowledge about the preliminary functions of CAD in Textile
2. To impart conceptual knowledge for the Industry as a Fabric Designer.
3. To understand fabric structure, figure designing for mass production.

## Course Outcomes (COs)

Student will be able:

1. To apply their knowledge on the various functions of the CAD in textile
2. To make different Fabric designing
3. To identify the fabric making process, print designing for fabric.
4. To use their knowledge for different tools of CAD in Textile

## List of practicals (Expand it if needed):

1. To Study woven structure
2. To study colour and weave effect
3. To Study Installation of CAD software
4. To Study Various menu commands
5. To prepare design on dobby CAD software with proper parameters and color effects. Take a printout.
6. To manage dobby design library with twill and honey comb.
7. To manage dobby design library with huck a back design.
8. To draw figured pattern on graph paper and apply to Jacquard CAD software with proper parameters and color effects. Take a printout.
9. To manage jacquard design library with same figure to different weave.
10. To draw figured pattern on graph paper and apply to printex CAD software with proper parameters and color effects. Take a printout.
11. To manage printex design library with different yarn and color specification.

  
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12. Introduction of electronic jacquard punching system

## References:

1. Fabric Structure & Design - Gokarneshnan, N
2. CAD Manuals
3. CAD-Cam Principles and applications - Rao; TMH

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BTCS207	ODS	COMPUTER PROGRAMMING – II	0	0	0	30	20	0	0	2	1

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## Course Objectives:

1. To understand Object oriented concepts.
2. To understand programming using object oriented techniques.
3. To understand the use of various system libraries.
4. To have the knowledge of important topics and principles of software development.
5. To write a computer program & to solve specified problems.
6. To use the Java SDK environment to create, debug and run simple Java programs.
7. To study event driven Graphical User Interface (GUI) programming

## Course Outcomes:

1. Students should be able to explain the object oriented concepts.
2. Students should be able to write programs using object-based programming techniques including classes, objects and inheritance.
3. Able to use of various system libraries.
4. Be aware of the important topics and principles of software development.
5. Have the ability to write a computer program to solves pecified problems.
6. Be able to use the Java SDK environment to create, debug and run simple Java programs.
7. Introduce event driven Graphical User Interface (GUI) programming

## UNIT-I

Java Fundamentals: Features of Java, OOPs concepts, Java virtual machine, Byte code interpretation Data types, variable, arrays, expressions, operators, and control structures, Objects, Introduction to Class:

  
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Instance members and member functions, constructors, constructor overloading, Static Method, Static classes, Inner classes

## UNIT-II

Introduction to Java classes and objects: Java features: Java syntax, data types, data type conversions, control statements, operators and their precedence. Introduction to Class: Instance members and member functions. Inner Classes, String Handling, Wrapper classes

## UNIT-III

Inheritance, Polymorphism and Collection: Class relationships: Inheritance and its types, Merits and Demerits. Association, Association inheritance, Polymorphism: Dynamic method dispatch, Runtime polymorphism, Abstract classes, Interfaces and packages, Collections.

## UNIT-IV

Exception Handling and Multithreading: Exceptions: Need for exceptions, Exception hierarchy: Checked Unchecked exceptions, Try, catch, finally, Throw, throws, creating exceptions.

Multithreading: Thread Life cycle, Multi threading advantages and issues, Simple thread program, Priorities and scheduling, Thread Synchronization.

## UNIT-V

Java I/O, Applets, Event Handling, and Database Connectivity: Basic concept of streams I/O stream & reader-writer classes. File handling. Applet and its Life Cycle, Basic GUI elements, Event Delegation Model and event handling Swing components: Applet, JButton, JFrame, etc. Sample swing programs JDBC architecture, establishing connectivity and working with connection interface working with statements, Creating and executing SQL statements, working with Result Set

## References:

1. Java- Head First 2nd edition Kathy Sierra , Bert Bates.
2. Programming with Java A Primer, E. Balaguruswamy Tata McGraw Hill Companies.
3. Java Programming John P. Flynt Thomson 2nd.

  
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4. Java Programming Language Ken Arnold Pearson.
5. The complete reference JAVA2, Hervert schildt. TMH.
6. Big Java, Cay Horstmann 2nd edition, Wiley India Edition.
7. Java – Balaguruswamy.

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## Practical's List:

1. Installation of J2SDK
2. Write a program to show Scope of Variables
3. Write a program to show Concept of CLASS in JAVA
4. Write a program to show Type Casting in JAVA
2. Write a program to show How Exception Handling is in JAVA
3. Write a Program to show Inheritance
4. Write a program to show Polymorphism
5. Write a program to show Access Specifiers (Public, Private, Protected) in JAVA
6. Write a program to show use and Advantages of CONTRUCTOR
7. Write a program to show Interfacing between two classes
8. Write a program to Add a Class to a Package
9. Write a program to show Life Cycle of a Thread
10. Write a program to demonstrate AWT.
11. Write a program to Hide a Class
12. Write a Program to show Data Base Connectivity Using JAVA
13. Write a Program to show "HELLO JAVA" in Explorer using Applet
14. Write a Program to show Connectivity using JDBC
15. Write a program to demonstrate multithreading using Java.
16. Write a program to demonstrate applet life cycle.
17. Write a program to demonstrate concept of servlet.

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