



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

ML307 ENVIRONMENTAL MANAGEMENT AND SUSTAINABILITY

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*					
ML-307	Compulsory	Environmental Management and Sustainability	60	20	20	0	0	4	0	0	4	

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

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

Course Objective

1. To create awareness towards various environmental problems.
2. To create awareness among students towards issues of sustainable development.
3. To expose students towards environment friendly practices of organizations.
4. To sensitize students to act responsibly towards environment.

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of five questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcomes

1. The course will give students an overview of various environmental concerns and practical challenges in environmental management and sustainability.
2. Emphasis is given to make students practice environment friendly behavior in day-to-day activities.

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COURSE CONTENT

Unit I: Introduction to Environment Pollution and Control

1. Pollution and its types (Air, Water, and Soil): Causes, Effects and Control measures
2. Municipal Solid Waste: Definition, Composition, Effects
3. Electronic Waste: Definition, Composition, Effects
4. Plastic Pollution: Causes, Effects and Control Measures

Unit II: Climate Change and Environmental Challenges

1. Global Warming and Green House Effect
2. Depletion of the Ozone Layer
3. Acid Rain
4. Nuclear Hazards

Unit III: Environmental Management and Sustainable Development

1. Environmental Management and Sustainable Development: An overview
2. Sustainable Development Goals (17 SDGs)
3. Significance of Sustainable Development
4. Environment Friendly Practices At Workplace and Home (Three Rs' of Waste Management, Water Conservation, Energy Conservation)

Unit IV: Environmental Acts

1. The Water (Prevention and Control of Pollution) Act, 1974: Objectives, Definition of Pollution under this act, Powers and Functions of Boards
2. The Air (Prevention and Control of Pollution) Act, 1981: Objectives, Definition of Pollution under this act, Powers and Functions of Boards
3. The Environment (Protection) Act, 1986: Objectives, Definition of important terms used in this Act, Details about the act.
4. Environmental Impact Assessment: Concept and Benefits

Unit V: Role of Individuals, Corporate and Society

1. Environmental Values
2. Positive and Adverse Impact of Technological Developments on Society and Environment
3. Role of an individual/ Corporate/ Society in environmental conservation
4. Case Studies: The Bhopal Gas Tragedy, New Delhi's Air Pollution, Arsenic Pollution in Ground Water (West Bengal), Narmada Valley Project, Cauvery Water Dispute, Fukushima Daiichi Disaster (Japan), Ozone Hole over Antarctica, Ganga Pollution, Deterioration of Taj Mahal, Uttarakhand flash floods

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B. Tech. in Textile Engineering
(2021-2025)

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BTTX301	DCC	FIBER 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):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to:

1. Explain the correct manufacturing process of various natural and manmade fibre.
2. Identify and evaluate the properties of different natural and manmade fibre accurately.
3. Demonstrate their knowledge on various fibres and their properties.

Syllabus:

Unit I Introduction to Polymers

9 HOURS

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

Unit II Introduction to fibres

7 HOURS

Structure of fibres: basic requirements for fiber formation, concept of order and morphology, molecular packing in crystalline and amorphous regions, physical structure of principal natural and man-made fibers.

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BTTX301	DCC	FIBRE SCIENCE I	60	20	20	0	0	3	1	0	4

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Unit III Fibre Characterization Techniques

8 HOURS

Study of fiber structures & methods of investigating fiber structures e.g. X-ray diffraction, optical and electron microscopy, I R absorption, thermal methods NMR.

Unit IV Introduction to Natural Fibres

10 HOURS

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

Unit V Introduction to Synthetic Fibres

11 HOURS

Manufacturing process of all important man-made fibres e.g. rayon, nylon, polyester, acrylic, polyolephins etc. with special reference to melt, dry and wet extrusion principle. Idea about the physical and chemical properties (influence of chemical constituents and different groups present) of above mentioned fibres and their uses. Problems associated with man-made fibres and their methods of rectification.

Text Books:

1. Manufactured Fibre Technology, Gupta, V.B., Kothari, V.K., Springer, 1997.
2. Textile Science: An Explanation of Fibre Properties, Gohl, E. P. G., Vilensky, L. D., CBS Publisher, 1984.

References:

1. Manmade Fibers – Moncrief, R.W., Halstead Press, New York, 1975.
2. Production of Synthetic Fibres – Vaidya, A. A., Prentice Hall of India, Private Limited, New Delhi, 1998.

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BTTX302	DCC	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 understand the processing of textile fibres on Blow Room and Card.
2. To demonstrate conceptual knowledge to solve the problem in Blow Room and Card.
3. To investigate the reasons of various problems and their solution in Blow Room and Card.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills, and attitudes. The students will be able:

1. To apply their knowledge for the production, processing of various fibers and analyse the problem of various faults occurring in Blow Room, and Card machines.
2. To apply their knowledge for setting of machine parameters for various textile fibers.

Syllabus:

Unit-I Introduction to yarn manufacturing

7 HRS

Flow chart of yarn manufacturing, Ginning of cotton fibers, different types of ginning, roller ginning, saw ginning, Importance of the ginning to eliminate the contamination in the yarn, The scenario of Indian ginning industries.

Unit-II Blow Room

10 HRS

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, chute feed systems, optical color material detectors, dust removal etc., Assessment of blow room performance, Calculation of blow room production.

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Unit-III Carding

12 HRS

Object of carding, Principles of working, Construction and working of different parts of the card, Type of card clothing, Concept of chute feed, Factors influencing the design of carding machines, Elements, and effect of their speed on carding performance, Assessment of card performance, Production calculation, Waste % and draft etc. concept of coiling.

Unit-IV Manmade Fiber Processing

8 HRS

Characteristics of manmade fibres, object of blending, types of blending, processing, and difficulties of manmade fibres in blow room and carding, idea of fibre distribution in yarns, factors affecting the blend irregularity, blend calculation.

Unit-V General Process Parameters and Maintenance

8 HRS

Environmental condition for various fibers in blow room and carding, Process parameters of different machines for different materials, General idea of speed, setting and their impact on both natural and manmade fibre processing, General idea of defects and remedies in blow room and carding, Maintenance schedule and important supervisory check points at blow room and carding.

Textbooks:

1. Manual of Textile Technology Vol. I, II, W. Klein, The Textile Institute, 1993.
2. Element of Raw Cotton and Blow Room, A R Khare, Sai Book Center, 1999.
3. Elements of Carding and Drawing, A R Khare, Sai Book Center, 1999.
4. Processing of Manmade and Blends on Cotton System, 3rd Edition, K R Salhotra, Textile Association (India), 2004.

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References:

1. Cotton Opening and Picking, Gilbert R. Merrill, Universal Publishing Corporation, 1999.
2. Cotton Carding, Gilbert R. Merrill, Universal Publishing Corporation, 1999.
3. Spun Yarn Technology, Vol. I Blow Room, A Venkatasubramani, 1985.
4. Spun Yarn Technology, Vol. II Carding, A Venkatasubramani, 1985.
5. Technology of Carding, R. Chattopadhyay, NCUTE Publication, Ministry of Textiles, Govt. Of India, 2003.

List of Experiments (Expand it if needed):

1. Demonstration of spinning machines for conversion of Fiber into Yarn.
2. To study the passage and working of material through Mixing Bale Opener.
3. To study the gearing system of Mixing Bale Opener.
4. To study the passage and working of material through Hopper Feeder.
5. To study the gearing system of Hopper Feeder.
6. To study the passage and working of material through Two Blade Beater.
7. To study the gearing system of Two Blade Beater.
8. To study the passage and working of material through Lap Forming Unit.
9. To study the gearing system of Lap Forming Unit.
10. To study the passage and working of material through Carding Machine.
11. To study the gearing system of Carding Machine.

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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):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to:

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.

Syllabus:

Unit-I Introduction to weaving

10 HRS

Introduction to fabric manufacturing process including principles of weaving. Primary motions, secondary motions an auxiliary motion of weaving. Different parts of the loom, main shaft of the shuttle loom. Introduction to weaving preparatory process including warp preparatory process and weft preparatory process.

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Unit - II Winding

9 HRS

Object of Winding, classification of winding machines. Passage of yarn through cone winding machines. tensioning devices, yarn clearers, yarn traversing devices, yarn stop Motion, ribbon formation causes and method of its elimination. Passage of yarn through high-speed automatic winding machines. Different features of Automatic high-speed winding machines, splicing- mechanism and advantages.

Unit-III Warping

8 HRS

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

Unit-IV Sizing

10 HRS

Objects of sizing, types of size preparation, passage of warp through slasher sizing and multicylinder sizing machines, various types of size ingredients used in size paste and their functions, detailed study of size box, detailed study of various drying systems - two cylinder, multi cylinder and air-drying system, measuring and self-stopping motion.

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Unit-V Pirn Winding and Drawing in

8 HRS

Weft winding - different types, passage of yarn through pirn winding machine, features of automatic pirn winding machine, bunching, package diameter, winding and binding coil ratio, calculation related to winding production and efficiency. Manual Drawing-in, semi – automatic and automatic drawing in machine, twisting and looming (knotting and gaiting), Calculations related to production and efficiency of winding and warping process.

Text Books:

1. Winding & Warping - Talukdar M K
2. Modern Preparation and Weaving Machinery - Ormerod A
3. Weaving Calculation – Sengupta

References:

1. Warping & Sizing - BTRA Silver Jubilee Monograph Series
2. Winding - BTRA Silver Jubilee Monograph Series
3. Weaving Technology and Operations - Ormerod & Walter S. Sondhelm

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List of Experiments:

1. Demonstration of working of loom and its different parts
2. Demonstration of process on conversion of yarn to fabric.
3. Study of the construction and working of winding machine and function of various part of it.
4. Setting of winding machine component for producing packages of suitable dimension.
5. Pirn winding machine - construction and it's working and setting of pirn winding m/c for manufacturing of various pirn with diameter and bunch length.
6. Study of various types of packages for dimension and their specialties (including cone angle, winding angle, coil per traverse, density, winding and binding coil etc).
7. Study and practicing weavers knot and fisherman's knot.
8. Study of working of Beam warping machine.
9. Study of working of Sectional warping machine.
10. Study and observation of the working of sizing machine.

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BTTX304	DCC	FABRIC STRUCTURE AND DESIGN I	60	20	20	30	20	3	0	2	4	

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

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Course Educational Objectives (CEOs):

1. To understand and design basic fabric structures (like plain, twill and satin structures as per specifications).
2. To identify and differentiate different derivatives of basic weaves and their effect in fabric.

Course Outcomes (COs):

Student will be able:

1. To develop new woven fabric design
2. To make honeycomb, welt structures.
3. To solve technical problems related to basic fabric structures on the loom.
4. To provide suitable draft and peg plan for a given weave for making design

Syllabus:

Unit-I Introduction to fabric structure and design

10 HRS

Passage of warp through loom, Identification of warp and weft, fundamentals of design, elements of design, method of representation of design, knowledge about design, draft, lifting plan and denting plan.

Unit-II Plain weaves and derivatives

10 HRS

Fabric classification, Weave notation and weave repeat, Introduction to design, drafting and peg-plan systems and their relationship, Plain weave and its derivatives e.g. warp rib, weft rib and hopsack/ matt.

Unit-III Twill weave and derivatives

10 HRS

Twill weave its different types and derivatives e.g., pointed, curved, broken, elongated, transposed, fancy and cork-screw.

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Unit-IV Satin and sateen weaves and its derivatives

6 HRS

Satin and sateen weave: Regular and Irregular sateen /satin and its derivatives

Unit-V Fancy weaves

12HRS

Diamond, Honeycomb ordinary honeycomb and bright on honeycomb, Mock-leno, Huck-aback, crepe weave, different types of bed ford cord, welt and pique.

Effect of colour on different weave, birds eye effect, hounds tooth effect, checks effect, stripe effect, step patterns effect etc.

List of Practical (Expand it if needed):

1. To study the design, draft and peg-plan of Plain weave
2. To study the design, draft and peg-plan of Satin and sateen weave
3. To study the design, draft and peg-plan of honeycomb
4. To study the design, draft and peg-plan of Brighton honeycomb
5. To study the design, draft and peg-plan of bed ford cord
6. To study the design, draft and peg-plan of welt and pique
7. To study the design, draft and peg-plan of twill
8. To study the colour and weave effects for strip weave
9. To study the colour and weave effects for check weave
10. To study the reed and heald count systems and related calculations

References:

1. Watsons' Textile Design & Color. - Grosicki
2. Grammar of Textile Design - Nisbet
3. Structural Fabric Design - Klibbe
4. Textile Weaving & Design - Murphy W S
5. Mary Humphries Fabric Glossary.

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