PSGR
Krishnammal College for Women

DEPARTMENT OF COSTUME AND APPAREL DESIGN

PROGRAMME:M.Sc. FASHIONANDAPPARELDESIGN

CHOICEBASEDCREDITSYSTEM(CBCS)&

LEARNINGOUTCOMES-BASEDCURRICULARFRAMEWORK(LOCF)

(SEMESTER –III)

M.Sc.FASHIONANDAPPARELDESIGN
2023-2025 Batch

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PROGRAMMELEARNINGOUTCOMES(PLO's)

Aftercompletionofthe programme,thestudent willbeable to

- **PLO1**:Understanddiverseculturalinfluencesandmarketdemandsof apparel industry
- **PLO2**:Createinnovativefunctionalandaestheticapparelsincluding accessories.
- **PLO3**:Designapparelswithadvancedigitaltoolsandtechnologies
- **PLO4:**Researchandanalyzetextileandfashion trends
- **PLO5:** Applyknowledgeandskill inthefashion fieldand entrepreneur.

PROGRAMMESPECIFICOUTCOMES(PSO's)

Thestudents at the timeof graduation

- **PSO1:**Graduatescanfunctionindependentlywiththeirinnovativeand creative skills
- **PSO2:**Graduateswillbeabletomeetthecurrent Industriesrequirements
- **PSO3:**GraduatesCanUndertaketheresearch/projectssectorstonew product development

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PSGR
Krishnammal College for Women

M.Sc.FASHIONANDAPPARELDESIGN(2023-2025BATCH &ONWARDS)
CHOICEBASEDCREDITSYSTEM(CBCS)&LEARNINGOUTCOMES-BASED CURRICULAR FRAMEWORK (LOCF)
(SEMESTER –III)

Programme and Branch M.Sc.FAD											
Syllabus & Scheme of Examination 2023-2025 Batch&Onwards											
SEMESTER	Course Code	TitleoftheCourse	Course type	Instruction	Contact hours	Tutorial Hours	Duration of Examination	Examination Marks			Credits
								CA	ESE	TOTAL	
III	MFD2405	Computer Integrated Manufacturing inApparel Industry	CC	3	43	2	3	25	75	100	3
	MFD2307	Textileand Apparel Testing	CC	4	58	2	3	25	75	100	4
	MFD2308	ApparelQuality Standardsand Specification	CC	4	58	2	3	25	75	100	4
	MFD23P06	3D Apparel Designand Modelling Lab	CC	5	75	-	3	25	75	100	4
	MFD23P07	Textileand Apparel TestingLab	CC	6	90	-	3	25	75	100	4
	MFD23E04/ MFD23E05/ MFD23E06	**ElectiveII** Nano Textiles/ Protective Textiles-Health Care Application/ Compliance StandardsinApparel Industry	DSE	3	43	2	3	25	75	100	3
	MFD23S1	Special Course Research Methodologyand Statistics	GE	3	43	2	3	-	100	100	2

	MFD24COM	ComprehensiveExam (Self-study)	GC	-			-	-	100	100	Gr
I-III	17MONL1	Online Course1 #	ACC	-	-	-	-	-	-	-	Completion Certificate
	MNM22CS2	CyberSecurity	AECC	2	30	-	-	100	-	100	Gr
	MFD23IST	Internship	DSE	21 days InternshipTrainingin Apparel Industry						100	Gr

DSE-Coursera **CC**-Allcore courses **DSE**-Electivein SEM III&IV Project

GE-IDC&ResearchMethodology **GC**-Comprehensiveexamination

ACC-Online course# **DSE**-Filedwork/Institutional Training

CA – Continuous Assessment **ESE**-EndSemesterExamination**Gr**-Grade

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QUESTIONPAPERPATTERN23-25 Batch

QuestionPaperPattern anddistributionofmarksPG-CoreandAllied-(First3Units)

CAQuestionfrom eachunitcomprisingof

Onequestion with a weightageof 2Marks	2 x 3 =6
Onequestion with a weightageof 5Marks (Internal Choiceat thesame CLO level)	5 x 3 =15
Onequestion with a weightageof 8Marks (Internal Choiceat thesame CLOlevel)	8 x 3=24
Total:	**45 Marks**

EndSemesterExamination–QuestionPaperPatternandDistributionofMarksPG-Core and Allied courses:

ESE Question Paper Pattern: 5x15=75Marks

Question from each unit comprising of

Onequestion with a weightageof 2Marks	2 x 5=10
Onequestion with a weightageof 5Marks (Internal Choiceat thesame CLO level)	5 x 5 =25
Onequestion with a weightageof 8Marks (Internal Choiceat thesame CLO level)	8 x 5 =40
Total:	**75 marks**

Open book exam for II PG, CIA, Test Pattern: 4 (4 out of 6) x 15 Marks = 60 Marks
Openbookexaminationtobeprovidedforanyonecourse.Question/problemstobesolvedby applying concepts. Questions with direct book answer to be avoided.

ContinuousInternalAssessmentPatternTheory

IYearUG /PG (23 Batch)

CIA Test	:	5marks**(conductedfor45marksafter50days)**
Model Exam	:	7 marks **(Conducted for 75 marks after 85 days (Each Unit 15 Marks))**
Seminar/Assignment/Quiz	:	5marks
Class Participation	:	5 marks
Attendance	:	3 marks
Total	**:25**	**Marks**

Practical

LabPerformance	:	7marks
Regularity	:	5marks
ModelExam	:	10marks
Attendance	:	3marks
Total	**:**	**25 marks**

ESEPractical Pattern

TheEndSemesterExaminationwillbeconductedforamaximumof75marks with a maximum 15 marks for the record and other submissions if any.

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MAPPINGOF PLOS WITH CLOS

COURSE	PROGRAMMELEARNING OUTCOMES				
	PLO1	**PL02**	**PL03**	**PLO4**	**PLO5**
COURSE CODE MFD2404					
CLO1	S	S	M	S	S
CLO2	S	S	S	S	S
CLO3	M	S	S	S	S
CLO4	M	M	M	S	S
CLO5	S	S	S	S	S
COURSECODE MFD2307					
CLO1	M	M	S	S	S
CLO2	M	M	S	S	S
CLO3	M	M	S	S	S
CLO4	M	M	S	S	S
CLO5	M	M	S	S	S
COURSECODE MFD2308					
CLO1	S	S	S	S	S
CLO2	M	M	S	M	S
CLO3	S	S	S	S	S
CLO4	S	S	M	S	M
CLO5	**S**	**S**	**S**	**S**	**S**
COURSECODE MFD23P06					
CLO1	S	S	S	M	S
CLO2	S	M	M	S	S
CLO3	S	S	S	S	S
CLO4	S	S	S	S	S
CLO5	S	S	S	S	S
COURSECODE MFD23P07					
CLO1	M	M	S	S	S
CLO2	M	M	S	S	S
CLO3	M	M	S	S	S
CLO4	M	M	S	S	S
CLO5	M	M	S	S	S
COURSECODE MFD23E04					
CLO1	S	S	S	S	S
CLO2	S	M	S	M	S
CLO3	S	S	S	S	S
CLO4	S	S	M	S	S
CLO5	S	S	S	S	S
	COURSECODE MFD23E05				
CLO1	S	S	S	S	S
CLO2	S	M	S	S	S

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CLO3	S	S	S	S	S
CLO4	S	S	M	S	S
CLO5	S	S	S	S	S
	COURSECODE MFD23E06				
CLO1	S	M	S	M	M
CLO2	S	M	S	M	M
CLO3	S	M	M	M	M
CLO4	S	M	M	M	M
CLO5	S	M	M	M	M
	COURSECODE MFD23S1				
CLO1	S	S	S	S	S
CLO2	S	S	M	S	M
CLO3	S	S	S	S	S
CLO4	S	M	S	S	S
CLO5	S	S	S	S	S

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COURSE CODE	COURSE NAME	Category	L	T	P	Credit
MFD2405	SEMESTER - II COMPUTER INTEGRATED MANUFACTURING IN APPAREL INDUSTRY	Theory	43	2	-	3

Preamble

This course offers a comprehensive exploration of design software for woven, knitted, and printed textiles in computer-aided fashion design systems and the usage of CAD and CAM systems in apparel industries.

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO Number	CLO Statement	Knowledge Level
CLO1	Define the basics of computer-integrated manufacture in apparel sector.	K1
CLO2	Explain the concept of CIM and its importance in apparel manufacture.	K2
CLO3	Explore applications of new technologiesin apparel production.	K3
CLO4	Describe CAD and CAM systems in apparel design and pattern making.	K5
CLO5	Assess automation in apparel manufacturing and management systems.	K6

Mapping with Programme Learning Outcomes

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	S	S	S	S	S
CLO2	S	M	S	S	S
CLO3	S	S	S	S	S
CLO4	M	M	M	M	M
CLO5	S	S	S	S	M

S- Strong; M-Medium

Syllabus

UNIT I **9 Hours**

Introduction to the operation of design software for woven, knitted and printed textiles. Computer aided fashion design system - Tools, manipulating techniques. Knowledge based system - Introduction to image processing and imaging system - Fabric and sewing defect identification using image processing - Artificial neural networks.

UNIT II **9 Hours**

3D body scanning- digitizing- grading and lay planning system - Introduction to graphic

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interface of the software-tools and functions used for pattern making, grading and marker planning.

UNIT III **8 Hours**

Preparation of virtual dummies, texture mapping, 2D and 3D draping, 3D modeling, E-fit analysis, animation, prototyping – virtual and rapid. Made to measure systems. Application of Artificial Intelligence - Augmented reality and virtual reality.

UNIT IV **9 Hours**

Applications of computer integration in fabric cutting, spreading and labeling machines. Computer aided special purpose sewing machine with control panels – pre-programmed options. Computer controlled embroidery machines. Digitalized colour communication – ZED. computerized color matching system.

UNIT V **8 Hours**

Application of electronically transfer documents - EDI - selection of line - control system - data base management system. Automatic material handling, storage, tracing and retrieval system. Applications of e-commerce and management information system -MIS in apparel industry, supply chain planning.

TEXT BOOKS :

S.NO	Name of the Authors	Title of the book	Publishers	Year of Publication
1.	Henry Webber	Computer – Integrated Manufacturing	NY Research Press	2020
2.	Alison Beazley & Terry Bond	Computer aided pattern design and product development	Wiley-Blackwell	2009
3.	Jinlian Hu	Computer Technology for Textile and Apparel	Woodhead Publishising	2011

REFERENCE BOOKS :

S.NO	Name of the Authors	Title of the book	Publishers	Year of Publication
1.	S.Sugumar& P Muthu kumarasamy	A computerized system for marker making in garment industry	The South India Textile Research Association	2009
2.	Kevin Tallon	Digital fashion illustration	Batsford publications	2008

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3.	Tracy Diane and Tom Cassidy	Colour forecasting	Blackwell publishing	2005
4.	V. Ramesh Babu	Industrial Engineering in Apparel Production	WPI Publishing	2012
5.	N.Vasugi raja	Computer applications in apparel industry	Pranav Publication	2011

E -Journals

- Fashion and Textiles
- Industrial Textiles
- Journal of Fashion Technology & Textile Engineering
- Textile World
- Textiles
- Journal of Textile Engineering and Fashion Technology

Contents and Presentation Schedule :

Unit-I				
Topic	**CLO/CO**	**NoofHours**	**ContentDeliveryMethods**	**LearningMethods**
Introductiontotheoperationofdesignsoftwareforwoven, knittedandprintedtextiles.	CLO1	3	Lecture – Chalk and Talk, PPT	Participatory Learning
Computeraidedfashiondesignsystemtools, manipulatingtechniques.	CLO2	3	Lecture – Chalk and Talk, PPT	Problem based Learning
Knowledge based system-introduction to imageprocessingandimagingsystem-fabricandsewing defectidentificationusingimageprocessing-artificialneuralnetworks	CLO3	3	Lecture – Chalk and Talk, PPT	Experiential Learning
Unit-II				
Topic	**CLO/CO**	**NoofHours**	**ContentDeliveryMethods**	**LearningMethods**
3D body scanning- digitizing- grading and lay planningsystem	CLO1	3	Lecture – Chalk and Talk, PPT	Participatory Learning
Introductionto graphicinterfaceofthesoftware-tools	CLO2	3	Lecture – Chalk and Talk, PPT	Participatory Learning

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Functionsusedforpatternmaking,gradingandmarker planning.	CLO3	3	Lecture – Chalk and Talk, PPT	Problem based Learning
Unit-III				
Topic	**CLO/CO**	**NoofHours**	**ContentDeliveryMethods**	**LearningMethods**
Preparationofvirtualdummies,texture mapping	CLO1	2	Lecture – Chalk and Talk, PPT	Participatory Learning
2Dand3Ddraping,3Dmodeling,E-fitanalysis, animation,	CLO2	2	Lecture – Chalk and Talk, PPT	Problem based Learning
Prototyping– virtualandrapid.Madetomeasure systems	CLO3	2	Lecture – Chalk and Talk, PPT	Experiential Learning
Application of ArtificialIntelligence-AugmentedRealityandVirtualReality	CLO4	2	Lecture – Chalk and Talk, PPT	Participatory Learning
Unit-IV				
Topic	**CLO/CO**	**NoofHours**	**ContentDeliveryMethods**	**LearningMethods**
Applicationsofcomputerintegrationinfabric cutting,spreadingandlabelingmachines.	CLO1	3	Lecture – Chalk and Talk, PPT	Participatory Learning
Computeraidedspecialpurposesewingmachinewithcontrolpanels	CLO2	2	Lecture – Chalk and Talk, PPT	Problem based Learning
pre-programmed options. Computercontrolledembroiderymachines	CLO3	2	Lecture – Chalk and Talk, PPT	Experiential Learning
DigitalizedcolourcommunicationZED computerized color matching system.	CLO4	2	Lecture – Chalk and Talk, PPT	Participatory Learning
	Unit-V			
Topic	**CLO/CO**	**NoofHours**	**ContentDeliveryMethods**	**LearningMethods**
ApplicationofElectronicallytransferdocuments(EDI)-selection of line-control system-data basemanagementsystem.	CLO1	2	Lecture – Chalk and Talk, PPT	Participatory Learning
Automaticmaterialhandling,storage,tracing andretrievalsystem	CLO2	2	Lecture – Chalk and Talk, PPT	Problem based Learning
Applications of e-commerce andManagementInformationSystem(MIS)inapparelindustry,supplychainplanning	CLO3	2	Lecture – Chalk and Talk, PPT	Participatory Learning
Computerizedcolormatchingsystem	CLO4	2	Lecture – Chalk and Talk, PPT	Experiential Learning

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Nameofthecourse	Computer integrated manufacturing in apparelIndustry
Nameofthe Faculty	Dr.R.Tryphena
Participatorylearning	70%
Experimentallearning	20%
Problembasedlearning	10%

Pedagogy

Lecture by chalk and talk, power point presentation, e-content, group discussion, assignment, quiz, peer learning, seminar.

Course Designer

Dr. R.Tryphena & Dr.M.Malini Devi

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COURSE CODE	COURSENAME	Category	L	T	P	Credit
MFD2307	TEXTILEANDAPPAREL TESTING	Theory	58	2	-	4

Preamble

Thiscoursehelpstoexplorethemethodologies,standards,andtechnologies employed in textile and apparel testing

CourseLearning Outcomes

Onthesuccessful completionofthecourse, studentswill beable to

CLO NUMBER	CLO STATEMENT	CLO LEVEL
CLO1	Explaintheimportanceand typesoftextiletesting	K2
CLO2	Demonstrate different methods, standards, principles and working of instruments used	K3
CLO3	Examineadvancedinstrumentationandcomputerizedtesting systems	K4
CLO4	Evaluateyarnandfabric properties	K6
CLO5	Evaluate and analyse the effects of various parameters affecting test results	K6

Mappingwith ProgrammeLearningOutcome

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	M	M	S	S	S
CLO2	M	M	S	S	S
CLO3	M	M	S	S	S
CLO4	M	M	S	S	S
CLO5	M	M	S	S	S

S-Strong;M-Medium

Unit-I **11 Hours**

Textile testing – definition – objectives, types – destructive and non-destructive. Selection of samples for testing: fiber - zoning, core sampling, random draw and cut square methods, yarn – random sampling and fabric sampling. Standard atmosphere for testing - measurement of moisture regain -conditioning oven & shirley moisture meter. Preparationof samples for testing: conditioning and pre-conditioning. Sources of textile testing standards: ISO, BIS, BSI, AATCC, ASTM, ANSI.

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Unit-II **11 Hours**

Conventional testing methods - cotton fiber length - baer sorter, fineness – sheffield micronaire, maturity - caustic soda swelling, strength - pressley bundle strength tester and stelometer. Determination of trash and lint in cotton - shirley trash analyser. Computerized testing methods - HVI, AFIS, cotton scope, MDTA4

Unit-III **12 Hours**

Yarn numbering systems - direct and indirect, conversion of count from one system to another, instruments for count determination – wrap reel and balance, quadrant balance, beesley balance. Yarn strength testing - Single yarn strength tester – UT J, UT R, leastrength tester. Yarn twist - definition, direction of twist, twist multiplier, measurement of yarn twist. Yarn evenness - classification of variation, methods of measuring evenness,Uster evenness tester- UT 6. Yarn faults - classification-Uster classimat. Yarn hairiness.

Unit-IV **12 Hours**

Physical parameters: length, width, count (EPIxPPI), crimp, weight (GSM), cover factor, thickness, air and water permeability, fabric dimensional stability to domestic washing and drying. Mechanical parameters – tensile strength, tearing strength, bursting strength,peelbondstrength.Handleandcomfortparameters -fabricabrasion,pilling,drape, stiffness, crease resistance /crease recovery, sensory testing, thermo-physiological testing, thermal comfort, FTT – fabric touch tester.

Unit-V **12 Hours**

Fabricflammabilitytesting -verticalandinclinedplane.Colourfastness - laundering, drycleaning,crocking,perspiration,sunlightandhotpressingandtestsfornaturaldyes. Seam testing - seam strength, seam slippage. Accessories testing- zipper, buttons, sewingthread. Testing of linings, interlinings, and fusible interlinings

TextBooks:

S.NO	Name of the Authors	Titleofthebook	Publishers	Year and Editionn
1	RaulJewel	TextileTesting5	APHPublishing Corporation	2005,1st Edition,
2	Booth J E	Principles Of Textile Testing	CBS Publishers and Distributors Pvt Ltd	1996,3rd Edition
3	P.Angappan, R. Gopalakrishnan	TextileTesting5	S.S.M.Institute of Textile Technology	1997

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ReferenceBooks:

S.NO	Name of the Authors	Titleofthebook	Publishers	Year and Edition
1	Ahmad	Advanced Textile Testing Techniques	TaylorandFrancis BooksLimited U.K.	2017,1stEdition
2	JinilianHu	FabricTesting	Wood head Publishing	2008,1stEdition, Kindle Edition
3	Amutha	Practical Guide to Textile Testing	WPIPublishing	2016,1st edition
4	ElliotBGroverand Hamby D S	Handbook of Textile Testing and Quality Control	WileyIndiaPvtLtd	2011,1st Edition
5	Gopalakrishnan D, Vinayagamurthi P, Kandhavadivu P	Textile Testing	Daya Publishing House	20211st edition
6	ArindamBasu	Textile Testing Fibre, Yarn & Fabric	The South India Textile Research Association	2006,2nd revised edition

E-Contents:

1 https://nptel.ac.in/courses/116/102/116102029/#

2 https://nptel.ac.in/courses/116/102/116102049/

3 https://www.iso.org/committee/48148.html

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COURSECONTENTANDLECTURE SCHEDULE						
Module No	**Topic**	**Knowledgelevel**	**No. of Periods**	**Content Delivery methods**	**Student engagement**	**Participatory learning/experiential learning/ problem based learning**
Unit-I						
1	Textile testing – definition – objectives, types – destructive and non-destructive.	CLO1	2	Lecture talk &Discussion	Group discussion	Participatory learning
2	Selection of samples for testing:fiber-zoning,core sampling, random draw and cut square methods,	CLO2	2	Lecture talk&PPT	Book review	Problem based learning
3	yarn – random sampling and fabric sampling. Standard atmosphere for testing-measurementof moistureregain	CLO3	2	Lecture talk &Seminar	Brainstorming	Participatory learning
4	conditioning oven & shirley moisture meter. Preparation of samples for testing: conditioning and pre-conditioning.	CLO4	3	Lecture talk&PPT	Peer learning	Participatory learning
5	Sources of textile testing standards: ISO, BIS, BSI, AATCC,ASTM, ANSI.	CLO4	2	Lecture talk &Discussion	quiz	Participatory learning
Unit-II						
6	Conventional testing methods-cottonfiber length - baer sorter, fineness – sheffield micronaire,maturity-causticsodaswelling, strength - pressley bundlestrengthtester and stelometer.	CLO1	5	Lecture talk&PPT	Group discussion	Participatory learning
7	Determinationoftrash and lint in cotton - shirley trash analyser.	CLO2	3	Lecture talk &Seminar	Book review	Problem based learning

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8	Computerizedtesting methods - HVI,AFIS,Cotton scope, MDTA4	CLO3	3	Lecture talk&PPT	Brainstorming	Participatory learning
Unit-III						
9	Yarn numbering systems - direct and indirect, conversion of count from one system to another, instruments for count determination – wrap reel and balance, quadrant balance, beesley balance	CLO2	4	Lecture talk &Videos	Group discussion	Participatory learning
10	Yarn strength testing - Single yarn strength tester – UT J, UT R, lea strength tester. Yarn twist - definition, direction of twist,twistmultiplier, measurementofyarntwist	CLO3	4	Lecture talk &Discussion	Book review	Experimental learning
11	Yarn evenness - classification of variation,methodsof measuring evenness, usterevennesstester-UT 6. Yarn faults - classification-uster classimat.Yarn hairiness.	CLO4	4	Lecture talk&PPT	Brainstorming	Experimental learning
Unit-IV						
12	Physical parameters: length, width, count (EPIxPPI), crimp, weight (GSM), cover factor, thickness, air and water permeability, fabric dimensional stability to domesticwashingand drying	CLO2	4	Lecture talk &Seminar	Book review	Participatory learning
13	Mechanical parameters – tensile strength, tearing strength, bursting strength, peel bond strength.	CLO3	4	Lecture talk &Discussion	Book review	Participatory learning

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14	Handle and comfort parameters fabric abrasion, pilling, drape, stiffness, crease resistance /crease recovery, sensory testing, thermo-physiological testing, thermal comfort, FTT – fabric touch tester.	CLO4	4	Lecture talk&PPT	Group discussion	Experimental learning
Unit--V						
15	Fabricflammabilitytesting - vertical and inclined plane. Colour fastness - laundering, dry cleaning, crocking, perspiration, sunlight and hot pressing and tests for natural dyes.	CLO3	6	Lecture talk&PPT	Group discussion	Participatory learning
16	Seam testing – seam strength, seam slippage. Accessories testing - zipper, buttons,sewingthread. Testing of linings, interlinings, and fusible interlinings	CLO4	6	Lecture talk &Seminar	Book review	Experimental learning

Nameofthecourse	**TextileandApparel Testing**
NameoftheFaculty	Dr.S.ThamaraiSelvi
Participatorylearning	40%
Experimentallearning	40%
Problembased learning	20%

Pedagogy

Lecture by chalk and talk, power point presentation, e-content, group discussion, assignment, quiz, peer learning, seminar.

CourseDesigner

Dr.R.Radhika

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COURSE CODE	COURSENAME	Category	L	T	P	Credit
MFD2308	APPARELQUALITYSTANDARDS AND SPECIFICATION	Theory	58	2	-	4

Preamble

This course is designed to provide a comprehensive understanding of the qualitystandards and specifications that are essential in the apparel industry.

CourseLearning Outcomes

Onthesuccessful completionofthecourse, studentswill beable to

CLO NUMBER	CLO STATEMENT	CLO LEVEL
CLO1	Describetheimportanceofqualitystandardsandspecifications in the apparel industry.	K 1
CLO2	Identifyanddescribethevariousqualitystandardsand specifications used in apparel production.	K 2
CLO3	Discoverinterpretandapplyqualitystandardsandspecifications to ensure product quality.	K 3
CLO4	Examinetheknowledgeofqualitycontrolprocessesand techniques used in the apparel industry.	K 4
CLO5	Developskillsinmeasuringandevaluatingapparelproducts against quality standards and specifications.	K 5

Mappingwith ProgrammeLearningOutcome

CLO LEVEL	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5
CLO 1	S	S	S	S	S
CLO 2	M	M	S	M	S
CLO 3	S	S	S	S	S
CLO 4	S	S	M	S	M
CLO 5	**S**	**S**	**S**	**S**	**S**

S-Strong;M-Medium

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Syllabus

Unit I **11 Hours**

Introduction to quality standards, importance, benefits, levels and sources of quality standards. ISO Standards for the Apparel Industry - ISO 9000 & ISO 14000 standards, OEKO Tex 100 standard, Made in Green, STEP, GOTS standards, GRI's sector standards -blue signstandards, ANSI standards, Textile Exchange standards, Cradle to Cradle certified standards.

Unit II **12 Hours**

Standards in garment construction, seams, seam finishes, darts, dart equivalents, underlining, interfacing, interlinings, linings, inseam pockets, applied pockets, slashed pockets, bindings, facings, inset bands, rib-stretch Bands, Collars, Sleeves, sleeve finishes- cuffs and plackets, Waistline edge treatments – waistbands, waistline facings, edge casings, internal waistline treatments, button and decorative snap closures, buttonholes, zippered closures, hems and hems treatments. Finishing of placketopening of upper and lower garment.

Unit III **12 Hours**

Quality Standards - Definition of a standard, benefits of standards, levels of standards, need for uniform standards, standards for different levels, quality standard andprice relationship, national, company,industry,international, standardizingbodies, AATCC, ASTM, ANSI, ISO, BSI, BIS. Quality control inspection and quality control of finished garments. Quality implementation system SA8000 Standard, 5S, TQM, Lean manufacturing and Six Sigma lean manufacturing.

Unit IV **11 Hours**

Specifications -Importance of specification sheet and its role in maintaining quality, process of spec sheet development, concept of tolerances - maximum, minimum, zero tolerance. Fabric inspection, classification of fabric defects, independent product quality certification.

Unit V **12 Hours**

Garment defects - cutting defects, sewing defects, assembly defects, pressing, finishing and packaging defects. Inspection procedures - raw materials, in process, and finalinspection.QualitycontrolinfinalInspection –AQL:Levels1.5,2.5,4.0,6.5.Cost of Quality and customer return.

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TextBooks :

S.NO	Name of the Authors	Titleofthebook	Publishers	Year and Edition
1	SaraJ.Kadolph	QualityAssurancefor Textiles and Apparel	Fairchild Publications	2007,2nd edition
2	G.PremaandJ. Hayavadana	Apparel Quality AssuranceandQuality Control Handbook	Woodhead Publishing	2016,2nd edition
3	RajkishoreNayak andRajivPadhye	GarmentManufacturing Technology	Woodhead Publishing	2015,edition

ReferenceBooks:

S.No	NameoftheAuthors	TitleoftheBook	Publishers	Year and Edition
1.	PradipMehta&S.K.Bhardwaj	ManagingQualityinApparel Industry	New Age Publishers	2011, edition
2.	StanleyBernard Brahams	The Fundamentals of Quality AssuranceintheTextileIndustry	CRS Press	2016
3.	JanaceBubonia-Clarke	ApparelQuality:AGuideto Evaluating Sewn Products	Fairchild Books	2015
4.	A. Chakraborty	ApparelQualityControl	PHI Learning Private Limited	2011,1st Edition
5.	PradipV.Mehta	QualityManagementinthe Apparel Industry	CRS Press	2012,1st Edition

E Journals:

- JournalofTextileandApparel,Technologyand Management
- InternationalJournalofTextileScience
- JournalofTextileEngineeringand FashionTechnology

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COURSECONTENTANDLECTURE SCHEDULE						
Module No	**Topic**	**Knowledgelevel**	**No. of Periods**	**Content Delivery methods**	**Student engagement**	**Participatory learning/experiential learning/ problem based learning**
Unit-I						
1	Introductiontoqualitystandards, importance, benefits, levels and sources of quality standards.	CLO1	4	Lecture talk& Discussion	presentation	Participatory learning
2	ISO Standards for the Apparel Industry - ISO 9000 & ISO 14000 standards, OEKO Tex 100 standard, Made in Green, STEP, GOTS standards, GRI's sector standards - bluesign standards, ANSIstandards.	CLO3	4	Lecturetalk & PPT	Group discussion	Experimental learning
3	TextileExchangestandards,Cradle to Cradle certified standards.	CLO3	3	Lecture talk& Seminar	Brainstorming	Participatory learning
Unit-II						
4	Standards in garment construction, seams, seam finishes, darts, dart equivalents,underlining,interfacing, interlinings, linings, inseam pockets, applied pockets, slashed pockets, bindings, facings, inset bands, rib-stretch Bands, Collars, Sleeves, sleeve finishes- cuffs and plackets	CLO1	6	Lecturetalk & PPT	Group discussion	Participatory learning
5	Waistline edge treatments – waistbands, waistline facings, edge casings, internal waistlinetreatments, button and decorative snap closures, buttonholes, zippered closures, hems and hems treatments.	CLO2	6	Lecturetalk &Seminar	Book review	Participatory learning
6	Finishingofplacketopening of upper and lower garment.	CLO3		Lecturetalk & PPT	Group discussion	Problem based learning
Unit-III						
7	Quality Standards - Definition of a standard, benefits of standards,levelsofstandards,need foruniform standards, standards for different levels,qualitystandardandprice relationship, national, company,	CLO2	6	Lecture talk& Discussion	Presentation	Participatory learning

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	industry,international,standardizing					
	bodies, AATCC, ASTM, ANSI, ISO, BSI, BIS.					
8	Quality control inspectionand quality control offinished garments. Quality implementation system SA8000Standard,5S,TQM, Lean manufacturing and Six Sigma lean manufacturing.	CLO3	6	Lecturetalk & PPT	Peerlearning	Participatory learning
	Unit-IV					
9	Specifications -Importance of specification sheet and its role in maintaining quality, process of spec sheetdevelopment,conceptof tolerances - maximum, minimum, zero tolerance.	CLO3	6	Lecturetalk &Seminar	Brainstorming	Problem based learning
10	Fabric inspection, classification of fabric defects,independentproduct quality certification.	CLO3	5	Lecturetalk & PPT	Peerlearning	Participatory learning
	Unit-V					
11	Garment defects - cutting defects, sewing defects,assembly defects, pressing, finishing and packaging defects.	CLO2	4	Lecturetalk &Discussion	Group discussion	Experimental learning
12	Inspection procedures - raw materials, in process, and final inspection	CLO4	4	Lecturetalk & PPT	Book review	Participatory learning
13	Quality control in final Inspection–AQL:Levels1.5, 2.5, 4.0, 6.5. Cost of Quality (CoQ) and customer return.	CLO5	4	Lecturetalk &Seminar	Brainstorming	Participatory learning

Nameofthecourse	**ApparelQualityStandardsandSpecification**
NameoftheFaculty	Dr.R.Radhika
Participatorylearning	30%
Experimentallearning	50%
Problembased learning	20%

Pedagogy

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Lecturebychalkandtalk,powerpointpresentation,e-content,groupdiscussion, assignment, quiz, peer learning, seminar.

Course Designer

Dr.R.Radhika

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COURSE CODE	COURSENAME	Category	L	T	P	Credit
MFD23P06	3DAPPARELDESIGNAND MODELLING LAB	Practical	-	-	75	4

Preamble

This course helps to develop and gain about knowledge in the use and application of 3D fashion design software.

CourseLearning Outcomes

Onthesuccessful completionofthecourse, studentswill beable to

CLO Number	CLO STATEMENT	Knowledge Level
CLO1	Recognizedesigns for 3D modelling	K1
CLO2	Illustrateandcreatefabricsfordesigndevelopment	K2
CLO3	Assesspatternand garmentforvirtual fitting	K3
CLO4	Experimenton colourwaysand 3D modelling	K4
CLO5	Createsimulationforthedevelopeddesigns	K5

MappingwithProgrammeLearningOutcomes

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	S	S	S	M	S
CLO2	S	M	M	S	S
CLO3	S	S	S	S	S
CLO4	S	S	S	S	S
CLO5	S	S	S	S	S

S-Strong;M-Medium

Syllabus

1. Toolsandfunctions of2D and3D software. **5 Hours**
2. Designandpatterndevelopmentofkidswear (3Designs) **6 Hours**
3. Fabricvisualization –creationofdigitizedfabricsforkidswear **6 Hours**
4. Assembling of pattern on 3D models and virtual fitting, Colour ways, simulation of kids wear (3 Designs) **12Hours**
5. Designandpatterndevelopmentofwomen'sfashionwear(3Designs) **9 Hours**
6. Fabricvisualization-creationofdigitizedfabricsforwomen’swear **6 Hours**

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7. Assembling of pattern on 3D models and virtual fitting, Colour ways, simulation of women's fashion wear (3 Designs) **7Hours**

8. Designandpatterndevelopmentofmen'sformalwear (3Designs) **9 Hours**

9. Fabricvisualization –creationofdigitizedfabricsformen'sformalwear **6 Hours**

10. Assembling of pattern on 3D models and virtual fitting, Colour ways, simulation of men's formal wear (3 Designs) **9Hours**

TextBooks:

S.NO	Nameofthe Authors	Titleofthebook	Publishers	Yearand Edition
1	SayemAbuSa	DigitalFashion Innovations	Taylor&Francis Group	2023,1st edition
2	Alison Beazley	ComputerAidedPattern Design and Product Development	Wiley-Blackwell;1st edition	2008, 1st edition
3	Jinlian Hu	ComputerTechnologyfor Textiles and Apparel	WoodheadPublishing; 1st edition	2011,1st edition

ReferenceBooks:

S.No	NameoftheAuthors	TitleoftheBook	Publishers	Yearand Edition
1	NatalieBray	DressFitting2nd Edition	John Wiley & Sons;Newedof2 Revisedededition	1987, 5thEdition
2	Kathryn Mckelvey	Kathryn Mckelvey	Wiley;2ndedition	2011, 2ndEdition
3	AlexandraSuhner Isenberg	Technical Drawing ForFashionDesign Garment Source Book Volume 2	PepinPress	2011,Pap/Cdredition1

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E-Contents :

1https://www.youtube.com/watch?v=QHvpX7H2tgg2..https://www.youtube.com/watch?v=OtEziA52iBs

3. https://www.youtube.com/watch?v=1YKcgzmulzU

4. https://geminicad.com/products/creative-studio/

COURSECONTENTANDLECTURE SCHEDULE						
Module No	**Topic**	**Knowledgelevel**	**No. of Periods**	**Content Delivery methods**	**Student engagement**	**Participatory learning/experiential learning/ problem based learning**
1	Toolsandfunctionsof 2Dsoftware.	CLO1	3	Lecture, PPT, demonstration, Video	Teaching & hands on practical	Experimental learning
	Toolsandfunctionsof 3D software.	CLO2	2	Lecture, PPT, demonstration	Teaching & hands on practical	Experimental learning
2	Design and pattern development of kidswear(3 Designs)	CLO3	6	Lecture, PPT, demonstration	Teaching & hands on practical	Experimental learning
3	Fabric visualization - creation of digitized fabrics for kids wear	CLO4	6	Lecture, PPT, demonstration, Video	Teaching & hands on practical	Participatory learning
4	Assembling of pattern on 3D models and virtual fitting	CLO4	6	Lecture, PPT, demonstration, Video	Teaching & hands on practical	Experimental learning
	Colour ways,3D modeling and simulation for kids wear (3 Designs)	CLO3	6	Lecture, PPT, demonstration, Video	Teaching & hands on practical	Experimental learning
5	Design and pattern development of women's fashion wear (3 Designs)	CLO2	9	Lecture, PPT, demonstration, Video	Teaching & hands on practical	Problem based learning

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6	Fabric visualization - creation of digitized fabrics for women's wear	CLO3	6	Lecture, PPT, demonstration, Video	Teaching & hands on practical	Experimental learning
7	Assembling of pattern on 3D models and virtual fitting	CLO2	4	Lecture, PPT, demonstration.	Teaching & hands on practical	Problem based learning
	Colour ways,3D modeling and simulation for women's fashion wear (3 Designs)	CLO2	3	Lecture, PPT, demonstration.	Teaching & hands on practical	Experimental learning
8	Design and pattern development of men's formal wear (3 Designs)	CLO2	9	Lecture, PPT, demonstration.	Teaching & hands on practical	Experimental learning
9	Fabric visualization - creation of digitized fabrics for men's formal wear	CLO3	6	Lecture, demonstration.	Teaching & hands on practical	Problem based learning
10	Assembling of pattern on 3D models and virtual fitting	CLO3	5	Lecture, demonstration	Teaching & hands on practical	Experimental learning
	Colour ways, 3D modeling and simulation for mens formal wear (3 Designs)	CLO3	4	Lecture, demonstration	Teaching & hands on practical	Experimental learning

Nameofthecourse	**3DApparelDesignandModellingLab**
NameoftheFaculty	Dr.R.Radhika,A.YamunaDevi
Participatorylearning	20%
Experimentallearning	70%
Problembased learning	10%

Pedagogy

Lecturebychalkandtalk,powerpointpresentation,e-content,groupdiscussion,peer learning, demonstration.

Course Designer

Dr.R.Radhika

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COURSE CODE	COURSENAME	Category	L	T	P	Credit
MFD23P07	TEXTILEANDAPPAREL TESTING LAB	Practical	-	-	90	4

Preamble

This coursehelps to develop and gain knowledge about thephysical testing oftextiles and apparels as per the standards used in Apparel industry.

CourseLearning Outcomes

Onthesuccessful completionofthecourse, studentswill beable to

CLO Number	CLO STATEMENT	Knowledge Level
CLO1	Understandthephysicalparametersoffibers,yarnsand fabrics.	K2
CLO2	Identifythemechanicalproperties ofwovenandknitted fabrics	K3
CLO3	Experimentwiththecomfortpropertiesofwovenandknittedfabrics	K3
CLO4	Distinguishthesuitabilityoffibers,yarnsandfabricsforvariousend application	K4
CLO5	Examinethephysicalpropertiesofapparels	K4

MappingwithProgrammeLearningOutcomes

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	M	M	S	S	S
CLO2	M	M	S	S	S
CLO3	M	M	S	S	S
CLO4	M	M	S	S	S
CLO5	M	M	S	S	S

S-Strong;M-Medium

Syllabus

TestingandEvaluationof:

IFibreand Yarn 15 Hours

1. Fibrelength,moistureregain
2. Estimationoflineardensityofyarn(Naturaland synthetic)
3. Leastrength,single/plyyarntwist,crimp length

II Fabric

4. WovenandKnitted -EPI,PPI,WPI,CPI, Thickness,GSM 12 Hours
5. Estimationofblend ratioof fabric 7 Hours

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6. FabricStiffness,CreaseRecovery,Drape 10 Hours
7. Tensile strength and elongation, Tear strength, Bursting strength, Abrasion Resistance, Pilling 15Hours
8. Fabricabsorbencytests-Drop,wicking,sprayandsinkingtests 10 Hours
9. Colourfastnesstosunlight,washing,wetanddry crocking,pressingPerspiration – Acidic and alkaline 10Hours

IIIApparel testing 11 Hours

10. Appareldimensionalstability,Spirality,Skewingandmeasurement,Peelbond strength

***Necessarypracticegiventhroughtheindustryandresearchcentersvisit.**

Textbooks:

S.NO	NameoftheAuthors	Titleofthebook	Publishers	Year and Edition
1	ElliotBrownGrover,Dame Scott Hamby	Handbook of TextileTesting and Quality control	TextileBook Publishers, New York	2007,1st edition
2	Booth J.E.,	Principles of TextilesTesting	CBSPublishers and Distributsors, New Delhi	1996,3rdedition
3	Saville,B.P	PhysicalTesting of Textiles	Wood head publishingLtd., England	2004,1stedition

ReferenceBooks:

S.No.	Author	TitleoftheBook	Publishers	Year and Edition
1	Wang Lijing	Performance Testing of Textiles, Methods, TechnologyandApplications	Woodhead Publishing, ElsevierLtd. New Delhi	2016,1stedition
2	JewelRaul	Textile Testing	APH Publishing Corporation New Delhi	1994, edition
3	Jinlian HU	FabricTesting	WoodHead Publishing, Cambridge, England	2008,1stedition
4	RuthEGlockand Grace I Kunz	ApparelManufacturing	Prenticehall, New Jersey	2005, 3rdedition

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E-Contents:

1. https://www.youtube.com/playlist?list=PLCC58838EBECB7149
2. https://www.youtube.com/channel/UCXw7428MTvquxKUZEOr4EAA/videos?view=0&so rt=dd&flow=grid
3. https://www.youtube.com/channel/UCGqWXJgzpXyyu283QbdYiFQ/videos

COURSECONTENTANDLECTURE SCHEDULE						
Module No	**Topic**	**Knowledgelevel**	**No. of Periods**	**Content Delivery methods**	**Student engagement**	**Participatory learning/experiential learning/ problem based learning**
1	Fibrelength,moisture regain .	CLO1	5	Lecture, PPT, demonstration, Video	Teaching & hands on practical	Experimental learning
2	Estimation of linear densityofyarn(Natural and synthetic)	CLO1	5	Lecture, PPT, demonstration	Teaching & hands on practical	Experimental learning
3	Leastrength,single/ply yarntwist,crimplength	CLO1	5	Lecture, PPT, demonstration	Teaching & hands on practical	Experimental learning
4	WovenandKnitted-EPI,PPI,WPI,CPI, Thickness,GSM	CLO2	12	Lecture, PPT, demonstration, Video	Teaching & hands on practical	Experimental learning
5	Estimationofblendratio of fabric	CLO2	7	Lecture, PPT, demonstration, Video	Teaching & hands on practical	Experimental learning
6	FabricStiffness,Crease Recovery, Drape	CLO2	10	Lecture, PPT, demonstration, Video	Teaching & hands on practical	Experimental learning
7	Tensile strength and elongation, Tear strength, Bursting strength, Abrasion Resistance, Pilling	CLO2	15	Lecture, PPT, demonstration, Video	Teaching & hands on practical	Experimental learning

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8	Fabric absorbency tests-Drop, wicking, spray and sinking tests	CLO3	10	Lecture, PPT, demonstration.	Teaching & hands on practical	Experimental learning
10	Colour fastness to sunlight, washing, wet and dry crocking, pressingPerspiration– Acidic and alkaline	CLO2	10	Lecture, PPT, demonstration.	Teaching & hands on practical	Experimental learning
10	Apparel dimensional stability, Spirality, Skewing and measurement,Peelbond strength	CLO5	11	Lecture, PPT, demonstration.	Teaching & hands on practical	Experimental learning

Nameofthecourse	**TextileandApparelTesting Lab**
NameoftheFaculty	**Dr.S.ThamaraiSelvi**
Participatorylearning	20%
Experimentallearning	70%
Problembased learning	10%

Pedagogy

Lecturebychalkandtalk,powerpointpresentation,e-content,groupdiscussion,peer learning, demonstration.

Course Designer

Dr.R.Radhika

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COURSE CODE	COURSENAME	Category	L	T	P	Credit
MFD23E04	NANOTEXTILES	Theory	43	2	-	3

Preamble

Thiscoursehelpstoexplorethefundamentalconceptsofnanotechnology,development of nano textiles in apparel sectors

CourseLearning Outcomes

Onthesuccessful completionofthecourse, studentswill beable to

CLO NUMBER	CLO STATEMENT	CLO LEVEL
CLO1	Explainthefundamental conceptsofnanotechnology	K1
CLO2	Indicate the propertiesandapplicationsof nanofibers by different process and methods	K2
CLO3	Discover the nano particles and preparation of nano-sized materials with functional finishing	K3
CLO4	AnalysethefunctionalityofNanotextiles	K4
CLO5	Explainthemethods ofcharacterizationnanoparticles	K5

MappingwithProgrammeLearningOutcomes

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	S	S	S	S	S
CLO2	S	M	S	M	S
CLO3	S	S	S	S	S
CLO4	S	S	M	S	S
CLO5	S	S	S	S	S

S-Strong;M-Medium

Syllabus

Unit-I **8 Hours**

Introductiontonanotechnology -conceptofnanoscaleandhistoricalbackgroundof nanotechnology, fundamental concepts of nano technology - bottom-up approaches, top down approaches, scope of nanotechnology in textile and apparel manufacturing

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Unit-II **9 Hours**

Synthesis and properties of nano fibers - electro spinning of nano fibres. Continuous yarns from electro spun nano fibres. properties of nano fibers, electro spraying and electro spinning by the capillary method, electro spraying and electro spinning by the chargeinjection method, controlling fiber orientation, applications of nano fibres viz, tissue engineering, filter media.

Unit-III **9 Hours**

Nano particles - Preparation of nano-sized materials - vapour phase reaction-commercially nano-particles- metals and metal oxides nano-particles- polymer and polymer nano-composites- Clay nano-particles, carbon nano particles-polymer nano-whiskers. Nano-particlesinfunctionaltextilefinishing-Wrinkleresistance-stainresistance-waterrepellency- anti-static performance- anti-bacterial effect-ultra violet protection.

Unit-IV **8 Hours**

Nano textiles and apparel - development of nano textiles and apparel using - nano-tex, nano-care,nano-dry, nano-touch, for home furnishing, technical textiles, smart and medical apparels. Polymerfunctionality and nano coating development of nano technologies for coating and structuring of textiles.

Unit-V **9 Hours**

Characterization of nanoparticles - X-ray diffraction, transmission electron microscopy and spectroscopy; Scanning electron microscopy (SEM) Transmission electron microscopy (TEM) Energy-dispersive x-ray spectroscopy (EDS), Small-Angle X-Ray Scattering (SAXS), The Cone calorimeter(CC), The mass loss calorimeter(MLC)

TextBooks:

S.No	NameoftheAuthors	Titleofthebook	Publishers	Year and Edition
1	MaiY-W	PolymerNano composites	Wood head publishing	2006,1ste dition
2	GuazhongCao	Nanostructure and nanomaterials	Imperial CollegePress, USA	2006,2nd edition
3	SeeramRamakrishna	Anintroduction to electro spinning and Nano fibers	World Scientific PublishingCo,	2005 1ST edition

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ReferenceBooks:

S.No	NameoftheAuthors	Titleofthebook	Publishers	Year and Edition
1	BrownPJandStevensK	Nano fibres and Nanotechnology in Textiles	Woodhead Pub. Ltd	2007, 1St edition
2	CRCTaylor&Francis, Boca Raton	NanotubesandNanofibres	YuryGogots	2006,1st edition
3	Mick Wilson, Kamali Kannangara, Geoff Smith,MichelleSimons and Burkhard Raguse	Nanotechnology-Basic Scienceand Emerging Technologies	OverseasPress, New Delhi	2005, edition
4	Ramakrishna.S Fujihara.K Teo,W.E.,Lim, T.C.,Ma,Z	Electrospinningand Nanofibers	WorldScientific Printers, Singapore	2005,1st edition

E-Journal:

- Textile World
- InternationalJournalofTextileScience
- JournalofFashionTechnology&TextileEngineering
- JournalofTextileEngineering

COURSECONTENTANDLECTURE SCHEDULE						
Module No	**Topic**	**Knowledgelevel**	**No. of Periods**	**Content Delivery methods**	**Student engagement**	**Participatory learning/ experiential learning/ problem based learning**
Unit-I						
1	Introduction to nanotechnology - concept ofnanoscaleandhistorical background of nanotechnology	CLO1	4	Lecture &Disc	Group discussion	Participatory learning
2	fundamental concepts of nano technology - bottom-up approaches, top down approaches,scope of nanotechnology in textile andapparelmanufacturing	CLO2	4	Lecture &PPT	Brainstorming	Participatory learning

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Unit-II						
3	Synthesis and properties of nano fibers - electro spinning of nanofibres. Continuous yarns from electro spun nanofibres.	CLO2	3	seminar &Discussion	Group discussion	Participatory learning
4	properties of nanofibers, electro spraying and electro spinning by the capillary method, electro spraying and electro spinning by the charge injection method	CLO2	3	Lecture & PPT	Book review	Participatory learning
	controlling fiber orientation, applications of nano fibres viz,tissue engineering, filter media.	CLO3	3	Lecture & Disc	presentation	Experimental learning
Unit-III						
5	Nano particles - Preparation of nano-sized materials- Vapourphase reaction- commerciallynano-particles- metals and metal oxides nano-particles- polymer and polymer nano-composites- Claynano-particles,	CLO3	4	Lecture &SEM	Group discussion	Problem based learning
6	carbon nano particles-polymer nano-whiskers. Nano-particles in functional textile finishing-Wrinkle resistance- stain resistance	CLO3	3	Lecture & PPT	Book review	Participatory learning
7	Water repellent-anti-static performance- anti-bacterial effect-ultra violet protection.	CLO2	2	Lecture &SEM	presentation	Experimental learning
Unit-IV						
8	Nano textiles and apparel - development of nano textiles and apparel using - nano-tex	CLO1	3	Lecture &Disc	Group discussion	Participatory learning
9	nano-care,nano-dry,nano-touch,for home furnishing,technical textiles, smart and medical apparels..	CLO2	3	Lecture &SEM	presentation	Participatory learning
10	Polymerfunctionality and nanocoating development of nano technologiesforcoatingandstructuring of textiles	CLO3	2	Lecture &PPT	Book review	Participatory learning
Unit-V						
11	Characterizationofnanoparticles - X-ray diffraction, transmission electron microscopy and spectroscopy	CLO3	3	Lecture &Disc	Group discussion	Experimental learning

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12	Scanning electron microscopy (SEM); Transmission electron microscopy (TEM);Energy-dispersive x-ray spectroscopy (EDS)	CLO4	3	Lecture &SEM	Book review	Participatory learning
13	Small-Angle X-Ray Scattering (SAXS), The Cone Calorimeter (CC), The Mass Loss Calorimeter(MLC).	CLO4	3	Lecture &PPT	present ation	Problem based learning

Nameofthecourse	**NanoTextiles**
NameoftheFaculty	-
Participatorylearning	70%
Experimentallearning	20%
Problembased learning	10%

Pedagogy

Lecturebychalkandtalk,powerpointpresentation,e-content,groupdiscussion, assignment, quiz, peer learning, seminar.

Course Designer

Dr.R.Radhika

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COURSE CODE	COURSENAME	Category	L	T	P	Credit
MFD23E05	PROTECTIVETEXTILES-HEALTH CARE APPLICATION	Theory	43	2	-	3

Preamble

Toimpart knowledgein thedevelopmentof healthcaretextiles forfront linepersonnel

CourseLearning Outcomes

Onthesuccessful completionofthecourse, studentswill beable to

CLO NUMBER	CLO STATEMENT	CLO LEVEL
CLO1	UnderstandthedifferentsegmentsofHealthcareandmedical textiles	K1
CLO2	Gainknowledgeonhealth care andmedical textile devices	K2
CLO3	UnderstandtheDesign criteriaforhealthcareproducts	K3
CLO4	FabricationofHealthcaremedical textiles	K4
CLO5	Understand the Quality and Standards for Healthcare Protectivetextiles	K5

MappingwithProgrammeLearningOutcomes

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	S	S	S	S	S
CLO2	S	M	S	S	S
CLO3	S	S	S	S	S
CLO4	S	S	M	S	S
CLO5	S	S	S	S	S

Strong;M-Medium

Syllabus

Unit I: 8 Hours

Introduction to Health care medical textiles-different segments of medical textiles and the products of each segments. Different segments of medical textiles -Healthcare medical textiles, Hygiene medical textiles, Implantable medical textiles, Non implantable medical textiles and Extra corporeal devices.

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Unit II: **9 Hours**

Introduction to healthcare and medical textile devices- various health care and medical textile device, different types of polymers Alginate, Chitosan, Silk, PLA, PGA, Carboxymethyl cellulose, Cellulose acetate, Polyurethane, Polyester, Polypropylene used inmedicalapplications.Chemicalandphysicalpropertiesofeachpolymerwithrespectto the specific product.

Unit III: **9 Hours**

Design criteria and fabrication of health care medical textile products- Technologies for Health care Textiles and Product Development- Knitting, Braiding, 3D weaving, nonwoven techniques, spacer fabric, composites, Hydrogel, Rapid prototyping, Electro spinning.

Unit IV: **9 Hours**

Healthcare medical textiles Introduction- Importance of textile materials in the development of health care products and the technologies used for the development of these products for - surgical gowns, drapes, coverall, face masks, antibacterial textiles. Manufacturers, sterilization process, advantages and disadvantages of the technologies with respect to disposal and non-disposal nature of each products- future directions.

Unit V **8 Hours**

Healthcare Medical textiles-Standards - National and International standards, quality norms as per BIS and CDSCO. Certification process involved in medical textiles.

Text Books:

S.No	NameoftheAuthors	Titleofthebook	Publishers	Year and Edition
1	V.K.Kothari (Ed)	Technical Textiles	IAFLPublications. New Delhi	2008,1st ed
2	SabitAdanur(Ed)	WellingtonSears Handbook of Industrial Textiles	Technomic Publishing Company,Inc, Pennsylvania	1995,1stEdition
3	RichardA.Scott(Ed)	Textilesfor Protection	Woodhead PublishingLimited, Cambridge	2005,1stEdition

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ReferenceBooks:

S.No	Author	TitleoftheBook	publishers	Year and Edition
1	SubhashAnand	MedicalTextiles	Woodhead Publishing Ltd	2005 Nil edition
2	JF Kennedy, SC Anand, M Miraftab, SRajendran	Medical Textiles-Proceedings of the fourth international conference on healthandmedical textiles	CRC Press	20072nd edition
3	S.C. Anand, M Miraftab,Kennedy	Medical Textiles and Biomaterials for Healthcare	Woodhead Publishing Ltd	2005,1stEdition
4	RichardA.Scott(Ed)	Handbook of Technical Textiles	Woodhead Publishing Limited, Cambridge	2005,1stEdition

E-Contents

- **https://youtu.be/zTdPS0fCCvs?si=4Pp0oURbSmpt5MeF**
- **https://youtu.be/OKSTt7TPr1A?si=J0uE5A6xhGxi9tZG**
- **https://youtu.be/vh04FIc6OPk?si=rGXZt_tn830RNfvW**

COURSECONTENTANDLECTURE SCHEDULE						
Module No	**Topic**	**Knowledgelevel**	**No. of Periods**	**Content Delivery methods**	**Student engagement**	**Participatory learning/experiential learning/ problem based learning**
Unit-I						
1	Introduction to Health care Medical textiles-different segments of medical textiles andtheproductsofeach segments.	3	CLO1	Lecture &Disc	Book review	Participatory learning

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2	Different segments of medical textiles -Healthcare medical textiles, Hygiene medical textiles,Implantablemedical textiles.	3	CLO2	Lecture &Semin ar	Group discussion	Participatory learning
3	Non implantable medical textiles and Extra corporeal devices.	2	CLO3	Lecture &PPT	presentation	Experimental learning
Unit-II						
4	Introduction to healthcare and medical textile devices-various health care and medical textile devices , different types of polymers Alginate,Chitosan,Silk,PLA, PGA, Carboxymethyl cellulose.	5	CLO3	seminar &Discus sion	Group discussion	Experimental learning
5	Cellulose acetate, Polyurethane, Polyester, Polypropylene used inMedical applications. Chemical and physical properties of each polymer withrespecttothespecific product.	4	CLO4	Lecture &Semin ar	Book review	Participatory learning
Unit-III						
6	Design criteria and fabrication of Health care Medical textile products-Technologies for Health care Textiles.	4	CLO2	Lecture &Discussion	presentation	Problem based learning
7	Product Development-Knitting, Braiding, 3D weaving, nonwoven techniques,spacerfabric, composites, Hydrogel, Rapid prototyping, Electro spinning.	5	CLO3	seminar &Discus sion	Book review	Participatory learning
Unit-IV						
8	Healthcare medical textiles Introduction- Importance of textile materials in the development of health care products and the technologies used for the development of theseproductsfor-surgical gownsdrapes,coverall.	5	CLO2	Lecture &PPT	Group discussion	Problem based learning

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9	face masks, antibacterial textiles. Manufacturers, sterilization process, advantages and disadvantages of the technologies with respect to disposal and non-disposal nature of each products- future directions.	4	CLO3	Lecture &Discus sion	Group discussion	Participatory learning
Unit-V						
10	HealthcareMedical textiles - Standards - National and Internationalstandards, quality norms as per BIS andCDSCO.	5	CLO3	Lecture &PPT	presentation	Experimental learning
11	Certificationprocessinvolved in medical textiles.	3	CL04	Lecture &Semin ar	Book review	Participatory learning

Nameofthecourse	**ProtectiveTextiles-HealthCare Application**
NameoftheFaculty	Mrs.JasiraBanu
Participatorylearning	70%
Experimentallearning	20%
Problembased learning	10%

Pedagogy

Lecturebychalkandtalk,powerpointpresentation,e-content,groupdiscussion, assignment, quiz, peer learning, seminar.

Course Designer

Dr.R.Radhika

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COURSE CODE	COURSENAME	Category	L	T	P	Credit
MFD23E06	COMPLIANCESTANDARDSIN APPAREL INDUSTRY	Theory	43	2	-	3

Preamble

This course provides gain about knowledge in the concept and need for compliance in apparel industry, technical compliance, ethical trading and international compliance.

CourseLearning Outcomes

Onthesuccessful completionofthecourse, studentswill beable to

CLO Number	CLO Statement	Knowledge Level
CLO1	Understandtheknowledgeandconceptneedforcompliance in Apparel industry.	K2
CLO2	Developknowledgeonhealthandsafetycompliance followed in Apparel industry	K3
CLO3	Interpretonenvironmentalcompliancetobeadheredby Apparel industry.	K3
CLO4	Examinethetechnicalcompliancenormsfollowedin Apparel industry.	K4
CLO5	Createcompliancenormsfollowedbyvariousinternational sourcing companies.	K5

MappingwithProgrammeLearningOutcomes

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	S	M	S	M	M
CLO2	S	M	S	M	M
CLO3	S	M	M	M	M
CLO4	S	M	M	M	M
CLO5	S	M	M	M	M

S-Strong;M-Medium

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Syllabus

Unit I **9 Hours**

Compliance-introduction-scopeandneedfordifferentcompliancesSocial,health and safety, environmental, technical, international compliance - concept, need, benefitsfor industry, workers and society. Social accountability and Corporate Social responsibility - scope and need. Social Compliance in supply chain management.

Unit II **9 Hours**

Social compliance - conventions on gender and caste discrimination, forced labour, child labour, and minimum age convention. SA 8000 – elements, Worldwide Responsible Apparel Production (WRAP). Ethical Trading Initiative (ETI). Corporate Social Responsibility (CSR)compensation–norms applicable in India, codeof conduct, minimum wages Act, remuneration, Trade Union Acts.

Unit III **8 Hours**

Environmental compliance – environmental laws and regulations, the regulations related to handling, recycling, and disposal of hazardous materials. Requirements of pollution control board, ISO 14000 – elements and certification.Eco standards, Eco labels, REACH, OEKO TEX, GOTS. Certification requirements for apparel industry

Unit IV **8 Hours**

Technical compliance - elements and requirements of ISO 9000, Meeting vendor compliance–WALMART, JCPENNY. Needle policy, maintenance of safety data of materials in stain removal, poly bags, children wear requirements.

Unit V **9 Hours**

Ethical trading and international compliance - Ethical Trading Initiative (ETI). Basic code of labour practice.Worldwide Responsible Apparel Production (WRAP) purposes, WRAP Principle, certification process, SA8000. National and international regulatingorganizations–OSHA,WRAP,GOTS,OEKOTEX.HIGG-HIGGconcept.

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TextBooks

S.No	Name of the Authors	Title of the book	Publishers	Year and Edition
1	Rathinamoorthy	Apparel Machineryand Equipment	Woodhead Publishing	2018Standard Edition
2	Seema Kapoor	Apparel Manufacturing Technology	SonaliPublications	2016
3	Richard M.Jones	TheApparel Industry	Wiley-Blackwell JohnWiley&Sons L;	2006,1st edition

ReferenceBooks

S.No.	Author	TitleoftheBook	Publishers	Year and Edition
1	Das.S,Li&Fung	Productsafetyandrestricted substances in apparel	Woodhead Publishing	2016,1st edition
2	Christie.R	Environmentalaspectsof textile dyeing	Heriot-Watt University Woodhead PublishingSeriesin Textiles	2006,1st edition
3	RajeshChhabara	SocialAccountability	AvaSoftechPvt.Ltd	2005

E-Contents:

- http://www.labour.nic.in
- http://www.unicef.org
- http://www.indianchild.com
- http://www.paycheck.in
- http://www.sa-intl.org

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COURSECONTENTANDLECTURE SCHEDULE						
Module No	**Topic**	**Knowledgelevel**	**No.of Periods**	**Content Delivery methods**	**Student engagement**	**Participatory learning/experiential learning/ problem based learning**
Unit-I						
1	Compliance - introduction -scope and need for different compliances Social, health and safety, environmental, technical, international compliance - concept, need, benefits for industry, workers and society.	CLO1	5	Lecture &Discussion	Book review	Participatory learning
2	Social accountability and Corporate Social responsibility - scope and need. Social Compliance in supply chain management.	CLO2	4	Lecture& Seminar	Group discussion	Participatory learning
Unit-II						
3	Social compliance - conventions on gender and caste discrimination, forced labour, child labour, and minimumageconvention.SA8000– elements, Worldwide Responsible ApparelProduction(WRAP).Ethical Trading Initiative (ETI).	CLO2	5	Lecture &PPT	presentation	Problem based learning
4	Corporate Social Responsibility (CSR) compensation–norms applicable in India, code of conduct, minimum wages Act, remuneration, Trade Union Acts	CLO3	4	Lecture& Discussion	Book review	Participatory learning
Unit-III						
5	Environmental compliance – environmentallawsandregulations, the regulations related to handling, recycling, and disposal ofhazardous materials.	CLO2	4	seminar &Discussion	Group discussion	Experimental learning
6	Requirementsofpollutioncontrol board,ISO14000–elementsand	CLO3	4	Lecture& PPT	Group discussion	Problem based learning

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	certification. Eco standards, Eco labels,REACH,OEKOTEX, Group discussionGOTS. Certification requirements for apparel industry					
Unit-IV						
7	Technical compliance - elements and requirements of ISO 9000, Meeting vendor compliance–WALMART, JCPENNY.	CLO2	4	Lecture &Disc	Book review	Participatory learning
8	Needle policy, maintenance of safety data of materials in stain removal, poly bags, children wear requirements.	CLO3	4	Lecture& Seminar	Group discussion	Experimental learning
Unit-V						
9	Ethical trading and international compliance - Ethical Trading Initiative (ETI). Basic code of labour practice.	CLO1	3	Lecture& PPT	presentation	Participatory learning
10	Worldwide Responsible Apparel Production (WRAP) purposes, WRAP Principle,certificationprocess, SA8000.	CLO2	3	seminar &Discuss ion	Book review	Participatory learning
11	National and international regulating organizations –OSHA, WRAP, GOTS, OEKO TEX. HIGG- HIGG concept.	CLO4	3	Lecture& PPT	Book review	Experimental learning

Nameof thecourse	**ComplianceStandardsin Apparel Industry**
NameoftheFaculty	-
Participatorylearning	70%
Experimentallearning	20%
Problembased learning	10%

Pedagogy

Lecturebychalkandtalk,powerpointpresentation,e-content,groupdiscussion, assignment, quiz, peer learning, seminar.

Course Designer

Dr.R.Radhika

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COURSE CODE	COURSENAME	Category	L	T	P	Credit
MFD23S1	RESEARCHMETHODOLOGY ANDSTATISTICS	Theory	43	2	-	2

Preamble

This course is designed to provide the foundational knowledge and skills necessary to conduct research in various fields and also focus on how to design research studies, analyze data, and interpret results effectively.

CourseLearning Outcomes

Onthesuccessful completionofthecourse, studentswill beable to

CLO NUMBER	CLO STATEMENT	CLO LEVEL
CLO1	Understandthefundamentalprinciplesofresearch methodology and its importance in academic and professional settings.	CLO1
CLO2	Conduct a literature review to identify relevant theories, concepts,andpreviousresearchrelatedtoaresearchtopic.	CLO2
CLO3	Identify and apply appropriate research methods and techniquesfordatacollection,analysis,andinterpretation.	CLO3
CLO4	Developaresearchproposalthatincludesaclearresearch question, objectives, methodology, and timeline.	CLO4
CLO5	Designandimplementaresearchstudyusingappropriate methodologies and tools.	CLO5

Mapping withProgrammeLearningOutcomes

CLO LEVEL	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5
CLO 1	S	S	S	S	S
CLO 2	S	S	M	S	M
CLO 3	S	S	S	S	S
CLO 4	S	M	S	S	S
CLO 5	S	S	S	S	S

S-Strong;M-Medium

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Syllabus

Unit-I **8 Hours**

Research -Definition, Meaning, Objectives,types of research, significance of research and defining research process. Research Problem - Sources, identification ,selection and statement, review of related literature.

Unit-II **9 Hours**

Research design - Meaning, types of research designs, basic principles of experimental designs. Developing a research plan related to the textile industry. Sampling - sampling census and sample survey, steps in sampling design, criteria for selecting a sampling procedure, characteristics of a good sample design, different types of sample designs.

Unit-III **8 Hours**

Methods of data collection - Observation, questionnaire and interview. Data processing andanalysis - collection, classification –tabulation,graphical, representationand data analysis.Interpretation of data and report Writing.

Unit-IV **9 Hours**

Measures of central tendency-Testing of Hypothesis -Parametric tests-Non Parametrictest-descriptivemeasures –mean,medianmodeanditsapplicationsdispersion – standard deviation,correlation, coefficient ofco-relationand its interpretation, rankco-relation, regression equation and prediction . Application of students test for small samples for single mean , difference in means- test for equality of variance. Non – parametric test, Application of Chi-square test, ANOVA test.

Unit-V **9 Hours**

Research Ethics and Responsible Conduct in Research: Brief history and analytical basic of research ethics, responsible conduct in research (Honesty in science: Integrity, Authorship, Conflicts of Interest, privacy and Confidentiality, Informed Consent, Risk/BenefitAssessment), The legal regulation of research ethics, in India (From UGC, MHRD and other governing agencies), Regulatory requirements relevant to international research

TEXTBOOKS :

S.NO	NameoftheAuthors	Titleofthebook	Publishers	Year and Edition
1	MarkN.K.Saunders, Philip Lewis, and Adrian Thornhill	ResearchMethods for Business Students	PearsonEducation Limited	2019 ,1st edition
2	NicholasWalliman	ResearchMethods: The Basics	Routledge	2017 2nd edition
3	S P Gupta	An Introduction to Statistical Methods	VikasPublishing House	2009
4	G.C.Ramamurthy	Research Methodology	Kindle Edition, DreamtechPress.	2011, 1st edition

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REFERENCEBOOKS:

S.No	NameoftheAuthors	TitleoftheBook	Publishers	Yearand Edition
1.	RanjitKumar	ResearchMethodology:AStep-by-Step Guide for Beginners	SAGE Publications Ltd	2020, 1st edition
2.	JohnW.CreswellandJ. David Creswell	Research Design: Qualitative, Quantitative,andMixedMethods Approaches	SAGE Publications, Inc	2017, 2nd edition
3.	NeilJ.Salkind	StatisticsforPeopleWho(Think They) Hate Statistics	SAGE Publications, Inc	2016, 1st edition
4.	GeoffreyR.Marczyk, David DeMatteo, and David Festinger	EssentialsofResearchDesignand Methodology	JohnWiley&Sons	2017
5.	VSKarpagavalli,Dr.C. P. Shirley, Dr. S. Shirly &Mrs. R Golden Nancy	ResearchMethodology	Jec Publication	2023, 1st edition

E-Contents:

- https://youtu.be/1vf8ZvADxfY?si=1eVoMT1jGCvOPD9-
- https://youtu.be/rloOsJxluBk?si=Sia_lRc4PzdHawXN
- https://youtu.be/YOppeXzFkBs?si=pDLbIHUfe3TxJ368
- https://youtu.be/I10q6fjPxJ0?si=Ce5ZG6XHzCpyRDSW

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COURSECONTENTANDLECTURE SCHEDULE						
Module No	**Topic**	**Knowledgelevel**	**No. of Periods**	**Content Delivery methods**	**Student engagement**	**Participatory learning/ experiential learning/ problem based learning**
Unit-I						
1	Research - Definition, Meaning, Objectives, types of research, significance of research and defining research process.	CLO1	4	Lecture &Discussion	Group discussion	Participatory learning
2	Research Problem -Sources, identification , selection and statement, review of relatedliterature.	CLO2	4	Lecture& Seminar	Book review	problem based learning
Unit-II						
3	Research design - Meaning, types of research designs, basic principles of experimental designs.	CLO2	3	Lecture& PPT	presentation	experientiallearning
4	Developingaresearchplanrelatedto the textile industry. Sampling - sampling census and sample survey, steps in sampling design, criteria for selecting a sampling procedure	CLO3	4	Lecture &Discussion	Book review	Participatory learning
5	characteristics of a good sample design, different types of sample designs.	CLO2	2	Lecture& Seminar	Role play	experientiallearning
Unit-III						
6	Methods of data collection - Observation, questionnaire and interview.	CLO1	4	Lecture& PPT	Book review	experientiallearning
7	Data processing and analysis - collection,classification–tabulation, graphical, representation and data analysis Interpretation of data and report Writing.	CLO2	4	Seminar&Discussion	Problem solving exercises	Participatory learning
Unit-IV						

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8	Measures of central tendency- Testing of Hypothesis -Parametric tests-Non Parametric test-descriptive measures – mean, median, mode and its applications dispersion	CLO1	3	Lecture& Seminar	Group discussion	Participatory learning
9	standard deviation,correlation, coefficient ofco-relationand its interpretation, rank co-relation, regression equation and prediction .	CLO2	3	Lecture &Discussion	Book review	problem based learning
10	Application of students test for small samples for single mean, difference in means- test for equality of variance. Non – parametric test, Application of Chi-square test, ANOVA test.	CLO4	3	Lecture& PPT	Group discussion	Participatory learning
Unit-V						
11	Research Ethics and Responsible Conduct in Research: Brief history and analytical basic of research ethics, responsible conduct in research (Honesty in science: Integrity, Authorship, Conflicts of Interest, privacy and confidentiality, informed consent, risk/benefit assessment),	CLO5	5	Seminar&Discussion	Group discussion	Problem based learning
12	The legal regulation of research ethics, in India (From UGC, MHRD and other governing agencies), Regulatory requirements relevant to international research	CLO5	4	Lecture&Discussion	presentation	Participatory learning

Nameofthecourse	**ResearchMethodology and Statistics**
NameoftheFaculty	Dr.T.R Indumathi
Participatorylearning	50%
Experimentallearning	20%
Problembased learning	30%

Pedagogy

Lecturebychalkandtalk,powerpointpresentation,e-content,groupdiscussion, assignment, quiz, peer learning, seminar.

Course Designer

Dr.R.Radhika

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