K.S. Rangasamy College of Technology

(Autonomous)



Curriculum & Syllabus

of

M.Tech. Textile Technology

(For the batch to be admitted in 2024 – 2025)

R 2022

Accredited by NAAC A++ Grade Approved by AICTE, Affiliated to Anna University, Chennai.

> KSR Kalvi Nagar, Tiruchengode – 637 215. Namakkal District, Tamil Nadu, India.



Department of Textile Technology

VISION

To be the centre of excellence in textile education, training, research and service.

MISSION

- To enlighten the students about the latest technology in textile industries through innovative educational practices and multi-disciplinary approach.
- To engage with the industry as solution providers through consultancy.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- **PEO1:** Manufacturing Technique and Solutions to Problems: Graduates are professionally competent in textile manufacturing technique and be able to identify problems and suggest suitable solutions.
- **PEO2:** Scientific Research Tools & Technology: Graduates follow scientific and technological developments, to conduct research and prepare the technical reports.
- PEO3: Interdisciplinary Skills and Entrepreneurship: Graduates will exhibit interdisciplinary skills that results in desired textile products in their career and develop entrepreneurial culture.

PROGRAMME OUTCOMES (POs)

Engineering Graduates will be able to:

- **PO1:** An ability to independently carry out research /investigation and development work to solve practical problems
- **PO2:** An ability to write and present a substantial technical report/document
- **PO3:** Demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program
- **PO4:** Apply knowledge of textile technology towards disruptive innovation.
- **PO5:** Analyze engineering concepts and apply sustainability goals to manage projects in multidisciplinary environments.
- PO6: Lead quality assurance and research & development activities of textile industry.

MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES (PEOs) WITH PROGRAMMEOUTCOMES (POs)

The M.Tech. Textile Technology Programme Outcomes leading to the achievement of the Program Educational Objectives are summarized in the following table.

Programme Educational		Pro	gramme O	utcomes		
Objectives	PO1	PO2	PO3	PO4	PO5	PO6
PEO 1	3	2	3	3	3	2
PEO 2	3	3	3	2	2	3
PEO 3	3	2	3	3	3	3

Contributions: 1- Low, 2- Medium, 3- High



K.S. RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215

(An Autonomous Institution affiliated to Anna University)

Courses of Study

(for the admitted batch in 2024-2025)

Curriculum SEMESTER I

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
		THEORY						
1.	60 PTT 101	Advanced Short Staple Spinning Technique	PC	3	3	0	0	3
2.	60 PTT 102	Process Control and Fabric Engineering	PC	3	3	0	0	3
3.	60 PTT 103	Quality Analysis of Textiles and Clothing	PC	3	3	0	0	3
4.	60 PTT 104	Statistical Application in Textile Engineering	PC	5	3	1	0	4
5.	60 PDB E26	Research Methodology and IPR	PC	3	3	0	0	3
6.	60 PTT E1*	Professional Elective I	PE	3	3	0	0	3
7.	60 PAC 001	English for Research Paper Writing	AC	2	2	0	0	0
		PRACTICALS						
8.	60 PTT 1P1	Quality Evaluation Laboratory	PC	4	0	0	4	2
		Total		26	20	1	4	21

SEMESTER II

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
		THEORY	•					
1.	60 PTT 201	Structural Mechanics of Textile Structures	PC	3	3	0	0	3
2.	60 PTT 202	Advances in Chemical Processing	PC	3	3	0	0	3
3.	60 PTT 203	Industrial Textiles	PC	3	3	0	0	3
4.	60 PTT 204	Clothing Comfort	PC	3	3	0	0	3
5.	60 PTT E2*	Professional Elective II	PE	3	3	0	0	3
6.	60 PTT E3*	Professional Elective III	PE	3	3	0	0	3
7.	60 PAC 002	Disaster Management	AC	2	2	0	0	0
		PRACTICALS						
8.	60 PTT 2P1	Textile Product Development Laboratory	PC	6	0	0	6	3
9.	60 PTT 2P2	Term Paper and Seminar	CG	2	0	0	2	0
		Total		28	20	0	8	21



SEMESTER III

S.No	Course Code	Course Title	Category	Contact Periods	L	т	Р	С
		THEORY						
1.	60 PTT 301	Protective Textiles	PC	3	3	0	0	3
2.	60 PTT E4*	Professional Elective IV	PE	3	3	0	0	3
3.	60 PTT E5*	Professional Elective V	PE	3	3	0	0	3
4.	60 PTT E6*	Professional Elective VI	PE	3	3	0	0	3
		PRACTICALS		•				
5.	60 PTT 3P1	Project Work (Phase I)	EEC	12	0	0	12	6
		Total		27	15	0	12	18

SEMESTER IV

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
	PRACTICALS							
1.	60 PTT 4P1	Project Work (Phase II)	EEC	24	0	0	24	12
	1. 60 PTT 4P1 Project Work (Phase II) EEC Total				0	0	24	12

TOTAL NUMBER OF CREDITS TO BE EARNED FOR AWARD OF THE DEGREE = 72

Note: PC-Professional Core Courses, PE-Professional Elective Courses, AC -Audit Courses, CG-Career Skill Development Courses



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PROFESSIONAL CORE (PC)

S.No.	Course Code	Course Title	Category	Contact Periods	L	Т	Ρ	С
1.	60 PTT 101	Advanced Short Staple Spinning Technique	PC	3	3	0	0	3
2.	60 PTT 102	Process Control and Fabric Engineering	PC	3	3	0	0	3
3.	60 PTT 103	Quality Analysis of Textiles and Clothing	PC	3	3	0	0	3
4.	60 PTT 104	Statistical Application in Textile Engineering	PC	5	3	1	0	4
5.	60 PDB E26	Research Methodology and IPR	PC	3	3	0	0	3
6.	60 PTT 1P1	Quality Evaluation Lab	PC	4	0	0	4	2
7.	60 PTT 201	Structural Mechanics of Textile Structures	PC	3	3	0	0	3
8.	60 PTT 202	Advances in Chemical Processing	PC	3	3	0	0	3
9.	60 PTT 203	Industrial Textiles	PC	3	3	0	0	3
10.	60 PTT 204	Clothing Comfort	PC	3	3	0	0	3
11.	60 PTT 2P1	Textile Product Development Laboratory	PC	6	0	0	6	3
12.	60 PTT 301	Protective Textiles	PC	6	0	0	6	3



PROFESSIONAL ELECTIVES (PE)

SEMESTER I, ELECTIVE I

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
1.	60 PTT E11	Alternative Spinning Systems	PE	3	3	0	0	3
2.	60 PTT E12	Characterization of Textile Polymers	PE	3	3	0	0	3
3.	60 PTT E13	Medical Textiles	PE	3	3	0	0	3

SEMESTER II, ELECTIVE II

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
1.	60 PTT E21	Theory of Drafting and Twisting	PE	3	3	0	0	3
2.	60 PTT E22	High Performance and Specialty Fibres	PE	3	3	0	0	3
3.	60 PTT E23	Nano Technology in Textiles	PE	3	3	0	0	3

SEMESTER II, ELECTIVE III

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
1.	60 PTT E31	Process Control and Optimization in Yarn Spinning	PE	3	3	0	0	3
2.	60 PTT E32	Enzyme Technology for Textile Processing	PE	3	3	0	0	3
3.	60 PTT E33	Financial Management in Textile Industry	PE	3	3	0	0	3

SEMESTER III, ELECTIVE IV

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
1.	60 PTT E41	Design concepts in High Speed Fabric Formation	PE	3	3	0	0	3
2.	60 PTT E42	Management of Textile Effluents	PE	3	3	0	0	3
3.	60 PTT E43	Textile Reinforced Composites	PE	3	3	0	0	3

SEMESTER III, ELECTIVE V

S.No.	Course Code	Course Title	Category	Contact Periods	L	Т	Ρ	С
1.	60 PTT E51	Control Systems and Automation in Textiles Engineering	PE	3	3	0	0	3
2.	60 PTT E52	Design and Analysis of Textile Experiments	PE	3	3	0	0	3
3.	60 PTT E53	Advances in Textile Printing	PE	3	3	0	0	3



SEMESTER III, ELECTIVE VI

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
1.	60 PTT E61	Filtration textiles	PE	3	3	0	0	3
2.	60 PTT E62	Project Planning and Management	PE	3	3	0	0	3
3.	60 PTT E63	Process Control in Textile Wet Processing	PE	3	3	0	0	3

CAREER SKILL DEVELOPMENT COURSES (CG)

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
1.	60 PTT 2P2	Term Paper and Seminar	CG	2	0	0	2	0
2.	60 PTT 3P1	Project Work - Phase I	CG	12	0	0	12	6
3.	60 PTT 4P1	Project Work - Phase II	CG	24	0	0	24	12

AUDIT COURSES (AC)

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
1.	60 PAC 001	English for Research Paper Writing	AC	2	2	0	0	0
2	60 PAC 002	Disaster Management	AC	2	2	0	0	0
3.	60 PAC 003	Constitution of India	AC	2	2	0	0	0

SUMMARY

S.No.	Category	Credits Per Semester				Total Credits	Percentage	
0.110.	Category	I	Ш	Ш	IV		(%)	
1.	PC	18	15	3	-	36	50	
2.	PE	3	6	9	-	18	25.00	
3.	CG	-	-	6	12	18	25.00	
5.	AC	AC I	AC II	-	-	-	-	
	Total	21	21	18	12	72	100	



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COURSES OF STUDY

(For the candidates admitted in 2024-2025)

SEMESTER I

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
		THEORY						
1.	60 PTT 101	Advanced Short Staple Spinning Technique	PC	3	3	0	0	3
2.	60 PTT 102	Process Control and Fabric Engineering	PC	3	3	0	0	3
3.	60 PTT 103	Quality Analysis of Textiles and Clothing	PC	3	3	0	0	3
4.	60 PTT 104	Statistical Application in Textile Engineering	PC	5	3	1	0	4
5.	60 PDB E26	Research Methodology and IPR	PC	3	3	0	0	3
6.	60 PTT E1*	Professional Elective I	PE	3	3	0	0	3
7.	60 PAC 001	English for Research Paper Writing	AC	2	2	0	0	0
	•	PRACTICALS			•			
8.	60 PTT 1P1	Quality Evaluation Laboratory	PC	4	0	0	4	2
	•	Total		26	20	1	4	21



K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215

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M.E. / M.Tech. Degree Programme

SCHEME OF EXAMINATIONS

(For the candidates admitted in 2024-2025)

FIRST SEMESTER

S.	Course	Name of the Course	Duration of	Weightag	ge of Mark	s	Minimum Marks for Pass in End Semester Exam					
No.	Code Internal Exam		Continuous Assessment*		Max. Marks	End Semester Exam	Total					
	THEORY											
1.	60 PTT 101	Advanced Short Staple Spinning Technique	2	40	60	100	45	100				
2.		Process Control and Fabric Engineering	2	40	60	100	45	100				
3.		Quality Analysis of Textiles and Clothing	2	40	60	100	45	100				
4.	60 PTT 104	Statistical Application in Textile Engineering	2	40	60	100	45	100				
5.	60 PDB E26	Research Methodology and IPR	2	40	60	100	45	100				
6.	60 PTT E1*	Professional Elective I	2	40	60	100	45	100				
7.	60 PAC 001	English for Research Paper Writing	2	100	-	100	-	100				
	PRACTICAL											
8.	60 PTT 1P1	Quality Evaluation Laboratory	3	60	40	100	45	100				

*CA evaluation pattern will differ from course to course and for different tests. This will have to be declared in advance to students. The department will put a process in place to ensure that the actual test paper follow the declared pattern.

**End semester Examination will be conducted for maximum marks of 100 and subsequently be reduced to 60 marks for theory End Semester Examination and 40 marks for practical End semester Examination.

60 PTT 101	Advanced Short Staple	Category	L	Т	Ρ	Credit
	Spinning Technique	PC	3	0	0	3

- To enable the students to learn the theory of various operations.
- To learn different stages of yarn spinning.
- To understand the influence of various parameters on quality and productivity of short staple yarn

Pre-requisites

• Nil

Course Outcomes

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

CO1	Theory of opening and cleaning in spinning preparatory machine, generation of hooks, neps and rectification.	Understand
CO2	Wire and roller drafting technology involved, their limitation and scope for improvement.	Analyse
CO3	Theory of twisted yarn with their effects on quality and productivity.	Understand
CO4	Knowledge on different twisting methods.	Understand
CO5	Influences of fiber bending on yarn uniformity and their types of levelling.	Understand

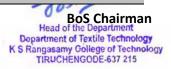
Mapping with Programme Outcomes

mapp	ing with the	grannic out										
COs		POs										
COS	1	2	3	4	5	6						
CO1	3	2	-	3	3	-						
CO2	3	2	3	3	-	-						
CO3	3	3	3	3	3	-						
CO4	-	-	3	3	-	3						
CO5	3	3	3	3	3	3						
3 _ St	rong: 2 - Moc	lium: 1 - Som	0									

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's		sessment Tests Irks)	End Sem Examination (Marks)
Category	1	2	
Remember	10	30	20
Understand	10	30	20
Apply	20	-	20
Analyse	30	-	40
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100



	K.S	.Rangasa		ege of Technolog		us R2022		
				ech Textile Tech		I		
	0		i - Advar	ced Short Stapl	e Spinning Tec		~	
Semester	Ho	ours/Weel	k	Total Hours	Credit	Maximu Marks	n	
Semester		Т	Р	Total Hours	С	CA	ES	Total
	L 3	0	0	45	3	40	60	100
I	5	0	0	45	5	40	00	100
forces actin transfer, sh theory of I operation; n	of fibre-ind ng on the fi ort fibre ren hook forma mechanism	lividualizat bre during moval and ation; the of remova	ion; fibre carding trash rer new ap al of short	e opening and c operation; the m noval; entanglem oproaches to im ; fibre, neps and t	echanism of fib ent and disenta prove fibre-disp	re dispersion, nglement of fit	fibre pres;	10
affecting dra and remedi aprons in mechanism of wire-poin extent on ya	f roller dra afting force ies; amoun roller draf of wire-po at drafting;	afting and a, fibre dyr at of draft ting; limit int drafting compariso	its appl namics du and draf ation of g and its on of wire	ication in yarn p rring drafting, dra t distribution on s apron-drafting a application in yau -point drafting wit re-extent by card	fting irregularitie strand irregulari and the scope m production; m th roller drafting	s and their ca ty; the functio for improven erits and dem ; influence of f	uses n of nent; ierits ibre-	10
angle on st formation a create real	trength, pa and their e twist in a st	rameters ffects on	affecting yarn qua	fibre and yarn c optimum twist le ality and product of twisting principle	vel; balloon and ivity; fundamen	d spinning tria tal requiremer	ngle	8
twisting prir	of twisting nciples - op	pen end ty	wisting, fa	ons of yarn; ply alse twisting, air-j dle twisting; meri	et twisting, air-v	ortex twisting	, up-	8
Fibre Blend Importance preparatory values; prod	of achievir process; cess param liate produc	ng homoge lateral an neters of s ct uniformi	d longitu pinning m	lending in fibre-m dinal fibre blendi nachinery for proc n uniformity; diffe	ing; analysis of essing blended	fibre blend in material; influe	ndex ence	9
						Total Ho	ours:	45
Text Book	(s):							
1. 2.	Klein W., 2010, ISB		nnology o	nology", Butterwo f Short-staple Spi			lanche	ster.
Reference(
1.	Vol. 24, N			., and Pavendhar stitute, Mancheste		•	Ũ	SS,
	Klein W.,							
2.	Institute.			to Combing, Drav	ving and the Rov	/ing Frame", T	he Tex	tile
2. 3.	Klein W.,	Mancheste "A Practic	er, 1999. al Guide		ving and the Rov 87.	-		
	Klein W., ISBN: 187 Lord P.R.	Mancheste "A Practic 70372298. , "Yarn Pre	er, 1999. al Guide oduction:	to Combing, Drav ISBN: 187037228	ving and the Rov 87. , The Textile Ins	titute, Manche	ester, 1	999.

**SDG 3 – Good Health and Well Being

***SDG 7 – Affordable and Clean Energy

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

	e Contents and Lecture Schedule	Γ
S. No	Торіс	No. of Hours
	e 1: Fibre Dispersion and Cleaning (Total: 10 Hours)	1
1.1	Necessity of fibre-individualization	1
1.2	Fibre opening and cleaning in blow-room machinery	1
1.3	Forces acting on the fibre during carding operation	1
1.4	Mechanism of fibre dispersion, fibre transfer, short fibre removal, and trash removal	2
1.5	Entanglement and disentanglement of fibres	1
1.6	Theory of hook formation	1
1.7	New approaches to improve fibre-dispersion in carding	2
1.8	Mechanism of removal of short fibres, neps, and trash in comber	1
	Module 2: Attenuation and Fibre Straightening (Total: 10 Hours)	
2.1	Principle of roller drafting and its application in yarn production	1
2.2	Ideal drafting; factors affecting drafting force	1
2.3	Fibre dynamics during drafting and drafting irregularities – causes and remedies	2
2.4	Amount of draft and draft distribution on strand irregularity	1
2.5	Function of aprons in roller drafting	1
2.6	Limitations of apron-drafting and scope for improvement	1
2.7	Mechanism of wire-point drafting and its application in yarn production	1
2.8	Comparison of wire-point drafting with roller drafting; influence of fibre-extent on yarn quality	1
2.9	Improvement of fibre-extent by carding, drafting, and combing actions	1
Modul	e 3: Twisting (Total: 8 Hours)	
3.1	Twisted yarn geometry; forces acting on fibre and yarn during twisting	2
3.2	Effect of fibre helix angle on strength, parameters affecting optimum twist level	2
3.3	Balloon and spinning triangle formation and their effects on yarn quality and productivity	2
3.4	Fundamental requirements to create real twist in a strand; mechanism of twisting in ring spinning	2
Modul	e 4: Twisting Methods (Total: 8 Hours)	
4.1	Separation of twisting and winding actions of yarn; ply twisting, twist balance	2
4.2	Modified twisting principles – open-end twisting, false twisting	2
4.3	Air-jet twisting, air-vortex twisting, up-twisting, two-for-one twisting	2
4.4	Hollow-spindle twisting; merits and demerits of modern twisting systems	2
	Module 5: Fibre Blending and Levelling (Total: 9 Hours)	
5.1	Importance of achieving homogeneous blending in fibre-mix	1
5.2	Types of mixing during spinning preparatory process	1
5.3	Lateral and longitudinal fibre blending	1
5.4	Analysis of fibre blend index values	2
5.5	Process parameters of spinning machinery for processing blended material	2
5.6	Influence of intermediate product uniformity on yarn uniformity	1
5.7	Different methods of levelling adopted during spinning processes	1
Cours	e Designer	
1.	Dr Bharani Murugesan – bharanim@ksrct.ac.in	

(aucos Bos Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

60 PTT 102	Process Control and Fabric	Category	L	Т	Ρ	Credit
00 FTT 102	Engineering	PC	3	0	0	3

- To understand theory of preparation of yarn for fabric formation.
- To impart knowledge on different types of fabric formation techniques
- To understand selection and control of process variables during preparatory and fabric formation.

Pre-requisites

• Nil

Course Outcomes

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

CO1	Knowledge on winding, warping and sizing for weaving preparation process.	Remember
CO2	Explain design developments and process parameters during weaving.	Understand
CO3	Explain design developments and process parameters during weft knitting.	Understand
CO4	Describe technical developments & machine details of Nonwoven machine.	Understand
CO5	Advancement in 3D weaving and 3D braiding technique.	Understand

Mapping with Programme Outcomes

COs -				POs					
COS	1	2	3	4	5	6			
CO1	-	-	2	3	3	-			
CO2	-	2	-	3	-	3			
CO3	-	2	-	3	-	3			
CO4	3	-	3	3	3	3			
CO5	-	2	3	3	3	-			
0 04-		Luna 1 Cama			·	•			

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's		sessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	30	34
Understand	30	30	66
Apply	-	-	-
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Bos Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

Syllabus										
K.S.Rangasamy College of Technology – Autonomous R2022										
M. Tech Textile Technology										
60 PTT 102 - Process Control and Fabric Engineering										
Semester	H	lours/Wee		Total	Credit		timum Mar ES			
Semester	L	Т	P	Hours	С	CA	Total			
	3	0	0	45	3	40	60	100		
knot factor requiremen ends break pick-up cor causes and	reparation requirement and clearin ts for differen in warping, v trol, yarn stre remedies. Co rping and siz	ng efficien It weft inse warp beam etch contro ontrol of pr	cy, Optimu ertion system quality rec I, quality rec	im clearing m and high s quirements; q quirements o	of yarn; wo peed knitting uality contro f sized beam	ound yarn g warping; g l in size rec n – defects	package control of cipe, size and their	9		
cross ends loom stops	ssories – qua and missing o Fabric quali veaving filame	ends. Loon ty control -	n shed proc - fabric def	ductivity contr ects and the	ol – loom sp	eed, loom e	efficiency,	9		
the machine	tches and the e, factors affe ic defects- ca	cting the fo	ormation of					9		
	1 trol in web p performance.		Influence	of material a	nd process p	parameters	on fabric	9		
Unconvent 3D Fabrics theory, wea principles,	ional Fabric – Structure, (ving process properties an aiding, prope	Formation Comparison , fabric pro d application	n of 2D and operties, ap ons; 3D Bra	plications; 3 aiding – 2D l	D orthogonal oraiding, 3 D	weaving – braiding, r	weaving nultilayer	9		
waip kintan	9.					Tot	al Hours:	45		
Text Book	s):					100		ΤV		
1. Rus 2. Albr 3040	sel S.J., "Han echt W., Fuch)6-1									
Reference	,									
	dur S., "Hand									
	val M.C. and									
^{3.} 090	P.R. and Mo 109538X			0	,		,			
4	h J.E., "Textil)73924X.	le Mathema	atics-Volum	e 3", The Tex	tile Institute,	Mancheste	r, 2014 ISE	3N:		
	ndustry Innova	ation and li	nfrastructur	e						
	Good Health									

SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy



Course	Course Contents and Lecture Schedule							
S.	Торіс	No. of						
No		Hours						
Module 1: Weaving Preparation (Total: 9 Hours)								
1.1	Yarn quality requirements for weaving and knitting	2						
1.2	Winding: yarn faults, quality of splice/knot, knot factor, and clearing efficiency	2						
1.3	Optimum clearing of yarn; wound yarn package requirements for different weft	1						
	insertion systems and high-speed knitting warping							
1.4	Control of ends break in warping; warp beam quality requirements	1						
1.5	Quality control in size recipe, size pick-up control, yarn stretch control	1						
1.6	Quality requirements of sized beam – defects, causes, and remedies	1						
1.7	Control of productivity in winding, warping, and sizing; waste control	1						
	Module 2: Weaving (Total: 9 Hours)							
2.1	Loom accessories – quality requirements and effects on loom performance	2						
2.2	Control of cross ends and missing ends	1						
2.3	Loom shed productivity control – loom speed, efficiency, and stops	2						
2.4	Fabric quality control – fabric defects, causes, and remedies	2						
2.5	Process control for weaving filament, blend yarn, and dyed yarn	2						
	Module 3: Knitting (Total: 9 Hours)							
3.1	Types of stitches and their influence on knit fabric properties	2						
3.2	Weft knitting – method of setting the machine	2						
3.3	Factors affecting the formation of loops in weft knitting	2						
3.4	Performance of different yarns in knitting	2						
3.5	Fabric defects in knitting – causes and remedies	1						
	Module 4: Non-Woven (Total: 9 Hours)							
4.1	Quality control in web preparation	3						
4.2	Influence of material and process parameters on fabric quality and performance	6						
	Module 5: Unconventional Fabric Formation (Total: 9 Hours)							
5.1	3D fabrics – structure, comparison of 2D and 3D fabrics, classifications	2						
5.2	Multilayer fabrics – theory, weaving process, fabric properties, applications	2						
5.3	3D orthogonal weaving – weaving principles, properties, and applications	2						
5.4	3D braiding – 2D braiding, 3D braiding, multilayer interlock braiding, properties,	2						
	and applications of braided fabric							
5.5	Concept of 3D multi-axial warp knitting	1						

Course Designer(s)

1. Dr N Sukumar - sukumar@ksrct.ac.in



60 PTT 103	Quality Analysis of Textiles	Category	L	Т	Р	Credit
	and Clothing	PC	3	0	0	3

- To understand different characteristics of yarns and fabrics
- To understand the effects of fabric characteristics on its end uses
- To test the yarn and fabric samples
- To analyse the various reports generated during quality evaluation of yarns and fabrics
- To interpret the results obtained through these reports for process and quality control.

Pre-requisites

• Nil

Course Outcomes

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

3

CO1	Use vario relevant o	Apply							
CO2	Analysis spectrum	Analyse							
CO3	Influence of tensile properties on yarn. Analyse						Analyse		
CO4	Evaluate comfort and low stress mechanical properties Analys						Analyse		
CO5	Evaluation of fabric properties and influence on fabric appearance. Analyse						Analyse		
Mappi	ing with Pro	gramme Out	comes						
COs				POs					
COS	1	2	3	4	5		6		
CO1	3	2	-	-	2	-			
CO2	3	-	-	-	-	-			
CO3	2	-	2	-	-	-			

3 - Strong; 2 - Medium; 1 - Some

2

Assessment Pattern

-

CO4

CO5

Bloom's		sessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	10	10	10
Understand	20	10	20
Apply	30	10	20
Analyse	-	30	50
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

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Syllabu	IS							
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		0 DTT 400		Extile Tech		N = (1, 1,		
60 PTT 103 - Quality Analysis of Textiles and Clothing Hours/Week Total Credit Maximum Mar								
Semes	ster						1	
I	L	Т 0	P 0	Hours 45	C 3	CA 40	ES	Total 100
<u> </u>	3	0	0	40	3	40	60	100
Depictio significa created	ariation of Text on of mass varia ance of U% and by mass variation	tion of textile d CV% for on	e strands in textile strar	nds; classific	ation and an			9
Effect of strands and avo periodic from sp	ce Length Curve of specimen ler ; theory of cons oid the introduct ; mass variation pectrum; compa ntation in spectr	ngth and to truction of V ion of mass in the form rison betwe	otal length /L curve; an variation d of spectrog en normal	on mass va alysis of vari luring the spi gram; determ and ideal sp	ariation mean ance length nning operat ination of the pectrum; type	curves to u ion; detern eoretical wa e of faults	inderstand nination of ave length and their	9
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Fabric A Study of and pillin appeara	Appearance an if fabric appeara ng resistance; ir ance; evaluation ice, absorbency	d other Pro ince in term influence of f	perties s of drape, ibre, yarn c	formability, o	crease recovers	tructure on	the fabric	9
						То	tal Hours:	45
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	BishopD.L.,"Fab SBN:187081275		ry and Me	chanical Pro	perties", Tex	ktile Progre	ess Vol.26/3	· · · · · · · ·
2. F	⁻ urter R., "Evenr	ness testina						
		leee leeting	in yarn pro	duction: Part	I", The Textil	e Institute,	Manchester,	
Referen	Furter R., "Evenness testing in yarn production: Part II", The Textile Institute, Manchester							1982
Referen1.1.1	1982	ness testing	in yarn proo	duction: Part	II", The Textil	le Institute,	Manchester	1982
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Reference 1. F 1. T 2. F 3. T 4 F	1982 ⁻ urter R.,"Streng <u>Manchester, 198</u> nstrumentation i	ness testing oth and elong 5. n the textile ogress in Te	in yarn proo gation testir industry", \ xtiles: Scier	duction: Part ng of single a /ol.1; 1996, Ir nce & Techno	II", The Textil nd plyyarns " nstrument So llogy Vol.1, T	le Institute, ,The Textil ciety of An esting and	Manchester e Institute, nerica, 1997 Quality	<u>1982</u>

*SDG 9 – Industry Innovation and Infrastructure **SDG 3 – Good Health and Well Being

***SDG 7 – Affordable and Clean Energy

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S. No	Торіс	No. of Hours
	Ile 1: Mass Variation of Textile Strands	
1.1	Depiction of mass variation of textile strands in time and frequency domain	2
1.2	Interpretation and significance of U% and CV% for textile strands	2
1.3	Classification and analysis of yarn faults created by mass variation	2
1.4	Depiction of mass variation in spinning and winding operations	1
	Ile 2: Variance Length Curves and Spectrogram of Textile Strands	
2.1	Effect of specimen length and total length on mass variation measurements	2
	of textile strands	
2.2	Theory of construction of Variance Length (VL) curves	2
2.3	Analysis of VL curves to avoid mass variation during spinning operation	2
2.4	Determination of periodic mass variation using spectrogram	2
2.5	Determination of theoretical wavelength from spectrum; comparison between	2
	normal and ideal spectrum	
2.6	Types of faults and their representation in the spectrogram	2
2.7	Interpretation of superimposed waves in spectrogram	1
Modu	Ile 3: Tensile Properties of Yarn	
3.1	Influence of testing factors on yarn tensile properties	2
3.2	Measurement and application of yarn modulus	2
3.3	Creep and stress relaxation of yarn	2
3.4	Significance of estimating minimum yarn strength	1
3.5	Mechanism of fabric failure - tensile, tear, abrasion, slippage, bursting, and	2
Made	fatigue	
	Ile 4: Comfort and Low-Stress Mechanical Properties	2
4.1	Role of transmission properties on thermal comfort: air permeability, water	Z
4.2	vapor permeability Resistance to penetration of liquid water, resistance to heat flow, and	2
4.Z	electrical conductivity	2
4.3	Low-stress mechanical properties during tensile, compression, bending,	2
4.5	shear, and buckling deformation	2
4.4	Influence of low-stress mechanical properties of fabrics on fabric handle,	2
7.7	tailorability, and sewability	2
Modu	Ile 5: Fabric Appearance and Other Properties	
5.1	Study of fabric appearance: drape, formability, crease recovery, wrinkle	2
5.1	recovery, and pilling resistance	-
5.2	Influence of fiber, yarn characteristics, and fabric structure on fabric	2
	appearance	-
5.3	Evaluation of fabric properties like dimensional stability, flammability, impact	2
	resistance, and absorbency	-
5.4	Summary and review	1

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60 PTT 104	Statistical Application in	Category	L	Т	Р	Credit
	Textile Engineering	PC	3	1	0	4

- To understand probability distributions and estimation theory
- To familiarize the students with various methods in hypothesis testing
- To understand the concept of analysis of variance
- To gain knowledge on process control using charts and process capability
- To design of experiments for textile applications.

Pre-requisites

• Nil

Course Outcomes

		•							
On the	successful of	completion of	the course, s	students will l	be able to				
CO1	Apply discrete and continuous distributions concepts in engineering problems						Apply		
CO2	Test the statistical hypothesis using normal, t and F and chi-square test Apply								
CO3	Make decisions with minimum error from available data Apply								
CO4	Study the	Apply							
CO5	Design and analysis the experiments Appl								
Mappir	ng with Pro	gramme Out	comes						
6.00				Pos					
Cos	1	2	3	4	5		6		
CO1	-	-	3	-	3		-		
CO2	3	-	-	-	-		-		
CO3	3	-	-	-	3		-		
CO4	2	-	-	-	3		2		
CO5	3	-	2	-	-				
3 – Str	ona [.] 2 – Me	dium: 1 – Sou	ne						

3 – Strong; 2 – Medium; 1 – Some

Assessment Pattern

Bloom's		sessment Tests Irks)	End Sem Examination (Marks)
Category	1	2	
Remember	10	10	20
Understand	30	10	30
Apply	20	40	50
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Syllab	us									
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Applications of Binomial, Poisson, Normal, t, Exponential and Weibull distributions in textile engineering – point estimates and interval estimations of the parameters of the distribution									[9]	
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	. ,		"Introdu	ction to St	atistical Oua	ality Control",	John Wil	ev and So	ns Inc	
1.		orre, 2019	, maoaa			anty Control ,		cy and oo	113, 1110.,	
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2.				v. Nolan, L lill Publicati		ost, "Quality	improveme	ent through	pianned	
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SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy



Course C	contents and Lecture Schedule	
S. No.	Topics	No. of hours
1	Probability Distribution and Estimations	
1.1	Applications of Binomial distribution in textile engineering	1
1.2	Applications of Poisson distribution in textile engineering	1
1.3	Applications of normal distribution in textile engineering	1
1.4	Applications of t distribution in textile engineering	1
1.5	Applications of exponential distribution in textile engineering	1
1.6	Applications of Weibull distributions in textile engineering	1
1.7	Point estimates of the parameters of the distribution functions	2
1.8	Interval estimations of the parameters of the distribution functions	1
1.9	Tutorial	3
2 2.1	Hypothesis Testing Sampling distribution and significance tests applicable to text parameters	1
2.2	normal test	2
2.3	t-test	2
2.4	Chi-square test	2
2.5	F-test	1
2.6	p-values and selection of sample size and significance levels with relevance to textile applications	1
2.7	Acceptance sampling	1
2.8	Tutorial	3
3	Analysis of Variance and Non-Parametric Tests	
3.1	Analysis of variance for different models	4
3.2	Non-parametric tests – sign test,	2
3.3	Rank test	1
3.4	Concordance test	1
3.5	Tutorial	3
4	Process Control and Capability Analysis	
4.1	Control charts for variables	3
4.2	Control charts for attributes	2
4.3	Basis, development, interpretation, sensitizing rules	1
4.4	Average run length	1
4.5	Process capability analysis	2
4.6	Tutorial	3
5	Design and Analysis of Experiments	
5.1	2 ^k full-factorial designs	2
5.2	Composite designs	1
5.3	Robust designs	1
5.4	Development of regression models	1
5.5	Regression coefficients	2
5.6	Adequacy test	1
5.7	Process optimizations	1
5.8	Tutorial	3
	Total	60

Course Designer(s)

1. Mrs.S.SRIPADMA – sripadma@ksrct.ac.in

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60 PDB E26	Bassarah Mathadalagy and IPP	Category	L	Т	Ρ	Credit
	Research Methodology and IPR	PC	3	0	0	3

- To understand the principles of research process.
- To develop knowledge in analytical skills for collection of research data.
- To understand the procedure in the preparation of reports.
- To accomplish basic idea about the process involved in intellectual property rights.
- To enlighten the process of patent filing.

Pre-requisites

• Nil

Analyse

Evaluate

Create

Total

Course Outcomes

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

CO1	To unders	stand the rese	earch process	s and design.			Understand
CO2	To gain th	e knowledge	about source	es and collect	ion of resear	ch data	Understand
CO3	CO3 To understand the procedure of data analysis, preparation of reports and checking plagiarism						
CO4	To gain th	ie knowledge	on Trade ma	ark and function	ons of UNES	CO in IPR	Understand
CO5	To enlight	en the benef	its, E-filing an	nd Examinatio	ons related to	patents	Apply
Mappi	ng with Pro	gramme Out	comes				
Cas				Pos			
Cos	1	2	3	4	5		6
CO1	3	-	-	-	-		-
CO2	3	2	-	-	-		-
CO3	3	3	-	-	-		-
CO4	-	-	-	-	-		-
CO5	-	-	-	-	-		-
			3 – Strong;	2 – Medium;	1 – Some		

Assessment Patte	rn		
Bloom's	Continuous Ass (Mar		End Sem Examination (Marks)
Category	1	2	
Remember	10	10	30
Understand	50	20	30
Apply	-	10	30

20

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60

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100

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K.S.Rangasamy College of Technology – Autonomous R2022 M. Tech Textile Technology 60 PDB E26 – Research Methodology and IPR Semester Hours/Week Total Credit Maximum Marks Semester L Total Credit Maximum Marks Colspan="2">Colspan="2" Colspan="2" Colspan="2" Colspan="2" Colspan="2" Colspan="2" Colspan="2" <th colspa<="" th=""><th>Syllabu</th><th>us</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th>	<th>Syllabu</th> <th>us</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Syllabu	us								
60 PDB E26 – Research Methodology and IPR Semester Hours/Week Total Credit Maximum Marks I 3 0 0 45 3 40 60 100 Research Design Overview of research process and design- Use of Secondary and exploratory data to answer the research question, Qualitative research, Observation studies, Experiments and Surveys, Selection of the Right Medium and Journal for publication, Translation of Research [9] Data Collection and Sources Measurements, Measurement Scales, Questionnaires and Instruments, Sampling and methods. Data – Preparing, Exploring, examining and displaying. [9] Data Analysis and Reporting Overview of Multivariate Analysis, Hypotheses testing and Measures of Association. Presenting Insights and findings using written reports and oral presentation. Checks for Plagiarism, Falsification, Fabrication, and Misrepresentation [9] Intellectual Property Rights Intellectual Property Rights [9] NUTO in IPR establishments, Right of Property, Common rules of IPR practices, Types and Facures of IPR Agreement, Trademark, Functions of UNESCO in IPR maintenance. [9] Patents – objectives and benefits of patent, Concept, features of patent, Inventive step, Specification, Types of patent application, process E-filling, Examination of patent grant agents. [9] 1. David I. Bainbridge, "Intellectua			K.S.F	Rangasamy				nous R202	22		
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6. The Institute of Company Secretaries of India, Statutory body under an Act of parliament, "Professional Programme Intellectual Property Rights, Law and practice", September 2013.					byright & T	rademark –	An Intellectu	ial Propert	y Desk Refe	rence",	
⁶ "Professional Programme Intellectual Property Rights, Law and practice", September 2013.					Secretaries	of India St	tatutory body	/ under an	Act of parli	ament	
							<u>, ana p</u>				

SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy



S.No.	Topics	No. of Hours
1.1	Overview of research process and design	1
1.2	Use of Secondary and Exploratory Data	1
1.3	Qualitative Research	1
1.4	Observation Studies	1
1.5	Experiments and Surveys	1
1.6	Selection of the Right Medium for Publication	1
1.7	Selection of the Right Journal for Publication	1
1.8	Translation of Research	1
1.9	Research Ethics and Integrity	1
2.1	Measurements and Measurement Scales	1
2.2	Design and Development of Questionnaires	1
2.3	Sampling Methods: Overview and Types	1
2.4	Instruments for Data Collection	1
2.5	Data Preparation and Exploration	1
2.6	Examining and Displaying Data	1
2.7	Methods of Collecting Primary Data	1
2.8	Secondary Data Sources	1
2.9	Data Reliability and Validity	1
3.1	Introduction to Multivariate Analysis	1
3.2	Hypothesis Testing	1
3.3	Measures of Association: Correlation and Regression	1
3.4	Presenting Insights	1
3.5	Writing Research Reports	1
3.6	Oral Presentation of Research Findings	1
3.7	Addressing Plagiarism	1
3.8	Identifying Falsification and Fabrication	1
3.9	Avoiding Misrepresentation in Research	1
4.1	Introduction to Intellectual Property Rights (IPR)	1
4.2	Evolution and Development of IPR	1
4.3	Trade Secrets and Utility Models	1
4.4	IPR and Biodiversity	1
4.5	Role of WIPO in IPR	1
4.6	Role of WTO in IPR	1
4.7	Right of Property and Common IPR Practices	1
4.8	Types and Features of IPR Agreements	1
4.9	Functions of UNESCO in IPR Maintenance	1
5.1	Introduction to Patents: Objectives and Benefits	1
5.2	Concept and Features of Patents	1
5.3	Inventive Step in Patents	1
5.4	Types of Patent Applications	1
5.5	Patent E-filing Process	1
5.6	Examination and Grant of Patents	1
5.7	Revocation and Equitable Assignments of Patents	1
5.8	Patent Licenses and Licensing Related Patents	1
5.9	Registration and Role of Patent Agents	1

Course Designer(s)

60 PTT 1P1	Quality Evaluation	Category	L	Т	Р	Credit
60 PTT IPT	Laboratory	PC	0	0	4	2

- Characteristics of textile materials and their related models to describe their properties.
- Conducting experiments to characterize the polymers and fibres

Pre-requisites

• Nil

Course Outcomes

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

CO1	Demon problen		lity to choose	methods app	ropriate to re	search	Apply		
CO2		o skills in qua sentation	rite report	Apply					
CO3	8 Knowle	dge on natior	al and intern	ational intelled	ctual property	[,] rights.	Apply		
CO4	Knowle	dge on Pater	t information	and Rights			Analyse		
CO5	Enlighte	en the new de	evelopment in	IPR			Apply		
Mappi	ng with Pro	gramme Out	comes						
	POs								
000				POs					
COs	1	2	3	POs 4	5		6		
COs CO1	1 3	2	3 2		5		6		
	1 3 2	2 - 3	•		5 - -		6 - -		
CO1	v	2 - 3 -	2		5 - - -		6 - - -		

-

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Assessment Pattern

3 - Strong; 2 - Medium; 1 - Some

CO5

Bloom's Category	Lab Experimen (Ma	ts Assessment rks)	Model Examination (Marks)	End Sem Examination	
	Lab	Lab Activity		(Marks)	
Remember	-	-	-	-	
Understand	-	-	-	-	
Apply	25	12	50	50	
Analyse	25	13	50	50	
Evaluate	-	-	-	-	
Create	-	-	-	-	
Total	50	25	100	100	

Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

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		K.S.I	Rangasam	y College o	of Technolo	gy – Autono	omous R2	022	
M. Tech Textile Technology 60 PTT 1P1 – Quality Evaluation Laboratory									
60 PTT 1P1 – Quality Evaluation Laboratory Hours/Week Total Credit Maximum Marks									
Semes	ter				Total	Credit			I
		L	T	P	Hrs	C	CA	ES	Total
		0	0	4	60	2	60	40	100
List of	Ехре	eriments:							
1.	Anal	ysis - FTIR	and NMR g	aphs					
2.	Dete	rmination of	residual fo	rmaldehyde	in fabrics				
3.	Evalu	uation of Fla	me retarda	nt finish					
4.	Evalu	uation of W	ater repelle	nt finish					
5.	Dete	rmination/ A	nalysis of c	ontact angl	e for porous	substrates			
6.	Phys	ical charact	erization of	special Tex	ctile structur	es (Woven/K	(nitted)		
7.	Cher	nical charac	terization c	f special Te	extile structu	res (Woven/	Knitted)		
8.	Нурс	othesis Testi	ng and Sig	nificance Te	esting				
9.	Optir	nisation Teo	hnique						
10.	Reg	ression Ana	lysis						
Lab Ma	nual								
1. "	Therr	nal Enginee	ring Lab M	anual", Dep	artment of M	/lechanical E	ngineering	, KSRCT.	
*SDG 9	– Ind	dustry Innov	ation and I	nfrastructur	е				
		ood Health		0					
***SDG	7 – /	Affordable a	nd Clean E	nergy					

Course Designer(s)

1. Mr P Maheshwaran - maheswaranp@ksrct.ac.in



K.S. RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215

(An Autonomous Institution affiliated to Anna University)

COURSES OF STUDY

(For the candidates admitted in 2024-2025)

SEMESTER II

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
		THEORY						
1.	60 PTT 201	Structural Mechanics of Textile Structures	PC	3	3	0	0	3
2.	60 PTT 202	Advances in Chemical Processing	PC	3	3	0	0	3
3.	60 PTT 203	Industrial Textiles	PC	3	3	0	0	3
4.	60 PTT 204	Clothing Comfort	PC	3	3	0	0	3
5.	60 PTT E2*	Professional Elective II	PE	3	3	0	0	3
6.	60 PTT E3*	Professional Elective III	PE	3	3	0	0	3
7.	60 PAC 002	Disaster Management	AC	2	2	0	0	0
		PRACTICALS			•			
8.	60 PTT 2P1	Textile Product Development Laboratory	PC	6	0	0	6	3
9.	60 PTT 2P2	Term Paper and Seminar	EEC	2	0	0	2	0
		Total		28	20	0	8	21

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215

(An Autonomous Institution affiliated to Anna University)

M.E. / M.Tech. Degree Programme

SCHEME OF EXAMINATIONS

(For the candidates admitted in 2024-2025)

SECOND SEMESTER

S.	Course	Name of the Course	Duration of	Weighta	ge of Mark	S	Minimum Marks for Pass in End Semester Exam	
No.	Code		Internal Exam	Continuous Assessment*		Max. Marks	End Semester Exam	Total
	L	THI	EORY			1		
1.		Structural Mechanics of Textile Structures	2	40	60	100	45	100
2.	60 PTT 202	Advances in Chemical Processing	2	40	60	100	45	100
3.	60 PTT 203	Industrial Textiles	2	40	60	100	45	100
4.	60 PTT 204	Clothing Comfort	2	40	60	100	45	100
5.	60 PTT E2*	Professional Elective II	2	40	60	100	45	100
6.	60 PTT E3*	Professional Elective III	2	40	60	100	45	100
7.	60 PAC 002	Disaster Management	2	100	-	100	-	100
		PRAG	CTICAL					
	60 PTT 2P1	Textile Product Development Laboratory	3	60	40	100	45	100
	60 PTT 2P2	Term Paper and Seminar	3	60	40	100	45	100

*CA evaluation pattern will differ from course to course and for different tests. This will have to be declared in advance to students. The department will put a process in place to ensure that the actual test paper follow the declared pattern.

**End semester Examination will be conducted for maximum marks of 100 and subsequently be reduced to 60 marks for theory End Semester Examination and 40 marks for practical End semester Examination.

BoS Chairman Head of the De epartment Department of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

60 PTT 201	Structural Mechanics of	Category	L	Т	Р	Credit
00 FTT 201	Textile Structures	PC	3	0	0	3

- The structure of ideal and real yarn, migration of fibres in the yarn, breakage mechanism of yarn, mechanics of blended yarns and relationship between structure and property of yarns.
- Geometrical properties of fabrics and its relationship with the mechanical properties of fabric and
- Theory and evaluation of fabric hand.

Pre-requisites

• Nil

Course Outcomes

On the	On the successful completion of the course, students will be able to									
CO1		ses of yarn st undamental re	arameters	Analyse						
CO2	Know	nowledge on fiber migration and their characteristics Understand								
CO3	Know	ledge on yarr	o characteristi	ics and blendi	ing mechanis	m	Understand			
CO4	Unde	rstand the and	atomy of wov	en structure			Understand			
CO5	To kn	To know the bending deformation of woven Understand								
Mapp	Mapping with Programme Outcomes									
COs		POs								
COS	1	2	3	4	5		6			
CO1	3	3	3	-	-		2			
CO2	3	2	2	-	-		2			
CO3	-	-	3	2	3		-			
CO4	2	2	3	3	-		2			
CO5	-	-	3	3	-		3			
3 - St	3 - Strong; 2 - Medium; 1 - Some									

Assessment Pattern

Bloom's		sessment Tests rks)	End Sem Examination (Marks)
Category	1	2	
Remember	10	30	20
Understand	10	30	20
Apply	10	-	20
Analyse	30	-	60
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Syllabus								
	K.S.R	angasamy		of Technolog		nous R202	2	
				Textile Tech				
				Mechanics				
Semester	F	lours/Wee		Total	Credit		ximum Mar	
	L	Т	Р	Hours	С	CA	ES	Total
II	3	0	0	45	3	40	60	100
Idealized pa	lical yarn str acking; mea	ucture; yarr surement	n count and of packing	r ns twist factors density and ns; measurer	radial pack	ing density		9
	aracteristics			t and spun ya haviour and h			arameters	9
characteristi Blend irregu and blend co	re propertie cs of yarns p larity, conce omposition o	s and thei properties o ept of elong n behaviou	r geometric f yarn. gation bala r of blendee	cal configura nce. Effect c			-	9
	and fabric s el for fabric p	tructure pro parameters	operty relat and crimp	tionships. Cri balance. Coi models.				9
Uniaxial and Bending de	d biaxial ter	sile defor woven fa	mation of v Ibric, bendi	voven fabric ing behaviou drape propert	ir of set and		brics and	9
						Tot	tal Hours:	45
Text Book(s								
	artz, Peter, shing, 2019.	ed. "Structu	ure and med	chanics of tex	tile fibre ass	emblies", W	/oodhead	
	/ami, B. C., . cations", Wil			.L.Scardino, ' York, 1985.	Textile Yarns	s: Technolo	ogy, Structur	e and
Reference(s	s):							
				Fabric Engir				
	e, J.W.S., P	•		er, "Structural	Mechanics o	f fibres, yaı	ms and fabr	ics",
3 Hass	an M. Berery	/., "Effect o	f Mechanic	al and Physic 1- 85573 -91		on Fabrics	s Hand", Wo	odhead
*SDG 9 – In								
**SDG 3 – G								

SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy

00 BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

Course Contents and Lecture Schedule

S.No.	Торіс	Total Hours
1.1	Introduction to Yarn Geometry and Packing of Fibers in Yarns	1
1.2	Idealized Helical Yarn Structure; Yarn Count and Twist Factors; Twist Contraction; Limits of Twist	2
1.3	Idealized Packing; Measurement of Packing Density and Radial Packing Density of Yarn	2
1.4	Packing in Actual Yarns; Specific Volume of Yarns; Measurement of Yarn Diameter	2
2.1	Fibre Migration: Introduction and Migration Characteristics in Continuous Filament and Spun Yarns	2
2.2	Effect of Various Parameters on Migration	2
2.3	Effect of Migration on Tensile Behaviour and Hairiness of the Yarn	2
3.1	Yarn Mechanics and Blended Yarn Mechanism: Fibre Properties and Geometrical Configuration	2
3.2	Tensile and Bending Characteristics of Yarns	2
3.3	Blend Irregularity and Concept of Elongation Balance	2
3.4	Effect of Properties of Constituent Fibres and Blend Composition on Blended Yarn Behaviour	3
4.1	Engineering Approach to Fabric Formation: Fibre, Yarn, and Fabric Structure Property Relationships	2
4.2	Crimp Interchange in Woven Fabric; Elastic Model for Fabric Parameters and Crimp Balance	2
4.3	Concept of Fabric Relaxation and Set; Practical Application of Geometrical and Elastic Models	2
5.1	Uniaxial and Biaxial Tensile Deformation of Woven Fabric	3
5.2	Bending Deformation of Woven Fabric; Bending Behaviour of Set and Unset Fabrics	2
5.3	Bending in Bias Direction; Bending, Shear, and Drape Properties of Woven Fabric	3

Course Designer(s)

1. Dr N Sukumar - sukumar@ksrct.ac.in

Formin BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT 202	Advances in Chemical	Category	L	Т	Р	Credit
00 PTT 202	Processing	PC	3	0	0	3

- To acquire a detailed knowledge about pretreatment.
- To acquire knowledge chemistry of dyeing
- To educate technically the various methods and process of dyeing, printing and finishing.

Pre-requisites

• Nil

CO4

CO5

Course Outcomes

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

3

3

CO1	Knowle pretrea	edge on grey f tment	nical	Understand						
CO2	Unders	Understand Kinetic and Equilibrium of dyeing. Understar								
CO3	Enume	Enumerate developments in dyes and colouration techniques. Unders								
CO4	Gain kı	Gain knowledge on printing techniques. Under								
CO5	Gain kı	Gain knowledge on different functional finishes.								
Mappi	ng with Pro	with Programme Outcomes								
COs				POs						
COS	1	2	3	4	5	6				
CO1	3	2	2	-	3	3				
CO2	3	3 - 2 - 3 -								
CO3	3 3 3 3 3 .									

3

3

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-

-

3

3 - Strong; 2 - Medium; 1 - Some

-

2

2

-

Assessment Patte	ern		
Bloom's		sessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	30	34
Understand	30	30	66
Apply	-	-	-
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Syllabus								
	K.S.Ra	angasam			y – Autonon	10us R202	2	
				extile Tech		•		
	· · ·				ical Process			
Semester	н	ours/Wee		Total	Credit		timum Mar	
	L	T0	P	Hours	C 3	CA 40	ES	Total
II Grey Prepa	3	0	0	45	3	40	60	100
Single stage process – d	e grey prepar egradation of	cotton du	iring desizin	g, scouring,	iated with ch bleaching. D s in pretreatn	amage of v		9
Kinetic and isotherms.	Determination	of dyeing of dye a	ffinity. State	of dye in s	- Langmuir, olutions. Agg ter concept ir	pregation n		9
containing f colorants. S and low tem	unctional dy uper critical f	es. Biode luid and C	egradable d CO2 dyeing,	lyes. Flores IR dyes, Ult	epellent dyes cent dyes a rasonic, mag logy in dyeing	nd phosph netic dyein	norescent	9
Sublimation. Jet printing	Thermal ink	jet printing Limitation	g- Ink syster ns. Transfer	ms, Fabric p r printing, (l effect. Dig retreatments Garment prir amer.	and post ti	reatment,	9
modification functional fi	and function	alization or alization	of synthetic nobic nano	fibres. Com finishes - F	sing of natur fort and heal Photocatalytic on methods.	th issues r self-clean	elated to ing nano	9
	<u> </u>					Tot	al Hours:	45
I. wood	, Ilrajani, "Adva Ihead publish	ing, 2013.			technical tex			
Z. New	York, 2004.	mical Proc	cessing of M	an-made Fib	res and Blen	ds", John V	/iley and Sc	ons,
Reference(<u></u>	· · · · · ·			B NL 000/	
2 Chak		Fundame	ntals and pra		SDC, Second ouration of te			
				Dyes", Acad	emic Press, L	ondon. 200	00	
4. H Uji	ie, "Digital Pri	nting of T	extiles", The	Textile Instit	ute, woodhea	ad publishir	ng, 2006.	
	dustry Innova Good Health a)				

SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy



on to Grey Preparation age Grey Preparation ion of Fibres in Chemical Pretreatment: Cotton Desizing, Scouring, and of Wool, Silk, Polyester During Pretreatment Process evelopments in Pretreatments and Equilibrium of Dyeing	Total Hours122222
age Grey Preparation ion of Fibres in Chemical Pretreatment: Cotton Desizing, Scouring, and g of Wool, Silk, Polyester During Pretreatment Process evelopments in Pretreatments and Equilibrium of Dyeing	2
ion of Fibres in Chemical Pretreatment: Cotton Desizing, Scouring, and of Wool, Silk, Polyester During Pretreatment Process evelopments in Pretreatments and Equilibrium of Dyeing	2
of Wool, Silk, Polyester During Pretreatment Process evelopments in Pretreatments and Equilibrium of Dyeing	
evelopments in Pretreatments and Equilibrium of Dyeing	2
and Equilibrium of Dyeing	_
	2
n leatharman Language. Fragmadiah, and "O" leatharman	2
n Isotherms: Langmuir, Freundlich, and "C" Isotherms	2
ation of Dye Affinity, Aggregation Number, and Its Effect on Dyeing	2
olubility Parameter Concept in Dyeing	1
on to Natural Dyes and Their Dyeing Process	2
al Dyes: Antimicrobial, Water Repellent, and Fluorine Containing Dyes	2
dable, Fluorescent, and Phosphorescent Colorants	2
d Dyeing Methods: Super Critical Fluid Dyeing, CO2 Dyeing, IR Dyes, c and Magnetic Dyeing	2
d Low Temperature Processes, Microencapsulation Technology in Dyeing	1
Printing: Optical Effect Pigment, Substrate Based Effects	2
arpet Printing and Sublimation	2
nkjet Printing: Ink Systems, Fabric Pretreatments, and Post Treatment	2
Printing and Garment Printing Techniques	2
of Textile Printing Workflow and New Design Styles	1
in Textile Finishing: Enzymatic Processing of Natural Fibres and Surface on of Synthetic Fibres	2
and Health Issues Related to Functional Finishes	2
	2
	1
	and Health Issues Related to Functional Finishes d Finishes: Super-Hydrophobic, Photocatalytic Self-Cleaning, Antimicrobial ishes and Lamination Methods r(s) a – premalatha@ksrct.ac.in



60 PTT 203	Industrial Textiles	Category	L	Т	Ρ	Credit
60 PTT 203	Industrial Textiles	PC	3	0	0	3

- To Classify industrial Textiles
- To gain knowledge on transportation textiles and geo textile
- To understand packaging for industrial textiles.

Pre-requisites

• Nil

Course Outcomes

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

CO1	Knowledge	e on fibers, ya	rns and fabri	cs in Industria	al textile		Understand
CO2	Gain know	ledge on proc	duction and a	pplication on	transportatio	n textiles	Understand
CO3	Understan	d the function	s and applica	ations of geo	textiles		Understand
CO4	Understand	d the properti	es of textile u	ised in agricu	ılture		Understand
CO5	Enumerate	in packaging	g and other i	ndustrial text	iles applicati	ons	Apply
Mappi	ing with Pro	gramme Out	comes				
COs				POs			
COS	1	2	3	4	5	6	6
CO1	3	-	3	3	-		-
CO2	2	-	3	3	2		-
CO3	2	-	3	2	-		-
CO4	2	-	3	2	3		-
CO5	-	-	3	3	2		2
3 - Str	rong; 2 - Med	lium; 1 - Som	e				

Assessment Pattern

Bloom's		ssessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	30	34
Understand	30	30	36
Apply	-	-	30
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

							y – Autonoi			
						Textile Techi – Industrial				
		L	lours/We		PTT 203		Credit	Max	kimum Mar	ko
Seme	ester	r	T	eek	P	Total Hours	Credit	CA	ES	Total
	1	3	0		<u>г</u> 0	45	3	40	60	100
	trial Te	-	0		0	40	5	40	00	100
yams filter fa fabric	and fal abric re struct opment	brics. Color quirements ures used	ation, fir , types-d for fill	hishi Iry a tratio	ng and c ind wet fil on. Desi	ojections of ir oating of tec tration. Filtra gn of filter nd electro s	hnical textile tion mechan fabrics. F	s. Filtration ism. Fibers, inishing tr	textiles - yam and eatments.	9
		on Textiles	:							
Autom sound used ir	otive to absort n these	extiles-requestion pads	iirement and car	inte	riors. Me	for pneumat thods of proc n applications	duction and	properties	of textiles	9
Geotex for geo geotex	extile xtile- fu otextile (tile Oth	applicatio	ns. Manu Jineering	ufact app	ture of w	geo textiles I oven and nc properties of 1.	onwoven geo	otextile Eva	luation of	9
for geo geotex archite Agricu Textile	extile-fu otextile tile Oth ctural a ulture 1 es in ag	application ner civil eng and ocean Fextiles riculture -re	ns. Manu jineering engineeri equireme	ufact app ing a nt a	ture of w blication - application	oven and no properties of	onwoven geo textiles useo	otextile Eva d in civil cor	luation of nstruction,	9
Geotex for geotex archite Agricu Textile shade Packa Requi net, b Manufa	fextile xtile- fu otextile dile Oth ectural a ulture 1 es in ag <u>fabrics</u> is is is is is is is is	application ner civil eng and ocean Fextiles riculture -re , soil mats nd Other In and prope ose and t and prope	ns. Manu ineering equireme and sack industrial erties of the	ufaci app ing a nt a s. Te x texti e, m	ture of w vilication - application nd proper ctiles les used nethod of	oven and no properties of n.	s used in cro caging and the characteris	otextile Eva d in civil cor op cover, bin ransport ba tics and a	luation of hstruction, rd netting, gs. Rope, oplication,	
Geotex for geotex archite Agricu Textile shade Packa Requi net, b Manufa	extile xtile- fu otextile ctile Oth ectural a ulture 1 es in ag fabrics ging a irement pelts, h acture	application ner civil eng and ocean Fextiles riculture -re , soil mats nd Other In and prope ose and t and prope	ns. Manu ineering equireme and sack industrial erties of the	ufaci app ing a nt a s. Te x texti e, m	ture of w vilication - application nd proper ctiles les used nethod of	oven and no properties of n. ties of textile in food pack	s used in cro caging and the characteris	otextile Eva d in civil cor op cover, bin ransport ba tics and a ted abrasive	luation of hstruction, rd netting, gs. Rope, oplication,	9
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SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy



Course Contents and Lecture Schedule

S.No.	Торіс	Total Hours
1.1	Introduction to Industrial Textiles: Classification and Market Overview	1
1.2	Growth Projections of Industrial Textiles	1
1.3	Technical Fibers, Yarns, and Fabrics: Properties and Applications	2
1.4	Coloration, Finishing, and Coating of Technical Textiles	2
1.5	Filtration Textiles: Fabric Requirements, Types (Dry and Wet), and Filtration Mechanism	2
1.6	Developments in Filter Fabrics: Melt Blown and Electrospun Filters; Evaluation and Standards	1
2.1	Introduction to Transportation Textiles	1
2.2	Automotive Textiles: Design and Requirements for Pneumatic Tyres, Airbags, Belts, Carpets, Sound Absorption Pads, and Car Interiors	2
2.3	Methods of Production and Properties of Textiles Used in Automotive Applications	2
2.4	Textiles in Other Transportation Applications: Rail, Aircraft, and Marine	2
3.1	Geotextiles: Functions and Application Areas	1
3.2	Fiber and Fabric Selection Criteria for Geotextile Applications	2
3.3	Manufacture of Woven and Nonwoven Geotextiles	2
3.4	Evaluation of Geotextiles and Other Civil Engineering Applications	2
4.1	Textiles in Agriculture: Requirements and Properties of Textiles Used in Crop Covers, Bird Netting, Shade Fabrics, Soil Mats, and Sacks	3
5.1	Textiles in Packaging: Requirements and Properties of Textiles Used in Food Packaging and Transport Bags	2
5.2	Rope, Net, Belts, Hose: Types, Methods of Production, Characteristics, and Applications	2
5.3	Manufacture and Properties of Textiles Used in Scrub Pads and Coated Abrasives	2
5.4	Paper Machine Clothing	2

1. Mrs C Premalatha – premalatha@ksrct.ac.in

0000 BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT 204	Clothing Comfort	Category	L	Т	Р	Credit
00 F11 204	Clothing Comfort	PC	З	0	0	3

- To Know about important characteristics of the fabrics ٠
- To differentiate phenomena which take place in the fabric related to the comfort properties of • the fabric.
- To know liquid transfer and water absorption through fabrics.
- To analyze the comfort properties of yarns and fibres. •
- To understand the physical properties of clothing and comfort of fabrics. •

Pre-requisites

• Nil

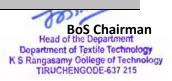
Course Outcomes

oouro										
On the	successful of	completion of	the course, s	students will b	e able to					
CO1	Understa moisture	heat and	Understand							
CO2	Correlate	the property	of the fabric v	with comfort t	o the wearer.		Apply			
CO3	Under the	e concept of n	noisture trans	sport in clothir	ng.		Understand			
CO4	Analyze t permeabi	on, air	Analyse							
CO5	Gain kno flammabi	ange and	Understand							
Mappi	ng with Pro	gramme Out	comes							
COs -				POs						
COS	1	2	3	4	5		6			
CO1	3	-	3	2	-		-			
CO2	2	-	3	3	3		-			
CO3	2	-	3	3	-		-			
CO4	3	3	3	3	3		-			
CO5	3	-	3	3	-		3			
3 - Stro	ng; 2 - Medium; 1 - Some									

uong,

Assessment Pattern								
Bloom's		ssessment Tests arks)	End Sem Examination (Marks)					
Category	1	2						
Remember	10	10	20					
Understand	10	10	20					
Apply	40	10	20					
Analyse	-	30	40					
Evaluate	-	-	-					
Create	-	-	-					
Total	60	60	100					

Syllabus



				M. Tech	Textile Techr	nology				
				60 PTT 204	4 - Clothing (Comfort	-			
Semes	tor	ŀ	lours/Wee		Total	Credit	Ma	<u>ximum Mar</u>	rks	
Semes		L	Т	Р	Hours	С	CA	ES	Total	
		3	0	0	45	3	40	60	100	
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		ement	in Clothin	na						
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SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy



Course	e Contents and Lecture Schedule	
S.No.	Торіс	Total Hours
1.1	Introduction to the Concept of Clothing and the Need for Selection	1
1.2	Definition and Components of Clothing Comfort	2
1.3	Psycho-Physiological Factors of Clothing Comfort and Aesthetic Concepts of Clothing	2
1.4	Various Aspects of Clothing Comfort: Thermal, Sensorial, and Body Movement Comfort	2
1.5	Comfort Variables: Thermal and Non-Thermal Comfort Variables	2
2.1	Human-Clothing-Environment System: Introduction to Thermo-Regulation in the Human Body	2
2.2	Heat Balance, Heat Loss, and Thermoregulation through Clothing	2
2.3	Heat Exchange through Clothing and Thermal Comfort Measurement	2
2.4	Parameters for Expressing Thermal Characteristics: Effect of Body Motion and Wind	1
3.1	Moisture Transport in Clothing: Liquid Water Transfer (Wicking and Water Absorption)	2
3.2	Principles and Evaluation of Moisture Vapour Transmission	2
3.3	Factors Affecting Heat and Mass Transfer through Fabrics	2
3.4	Parameters Expressing Heat and Mass Transmission; Air Permeability and Its Measurement	2
4.1	Comfort Properties of Fibers: Physical Modification of Fibers	2
4.2	Comfort Properties of Yarns: Effect of Yarn Structure and Spinning Techniques; Texturizing	2
4.3	Comfort Properties of Fabric Structures: Fabric Constructional Parameters and Finishing	2
5.1	Physical Properties of Clothing and Comfort: Thermal Resistance, Water Vapour Diffusion Resistance, Water Holding Property	2
5.2	Effect of Fabric Properties on Comfort: Radiation Exchange and Flammability	2
5.3	Comfort Properties of Clothing with Internal Spaces	1
Course	e Designer(s)	
1.	Mrs C Premalatha – premalatha@ksrct.ac.in	

forming BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT 2P1	Textile Product Development	Category	L	Т	Ρ	Credit
00 PTT 2PT	Laboratory	PC	0	0	6	3

• To enable the student to design, innovate and develop a product that can be commercialized

Pre-requisites

• Nil

Course Outcomes

On the	the successful completion of the course, students will be able to									
CO1		Describe the significance of product development in textiles and its overall design logic.								
CO2		Explain the market research, product life cycle and bench marking with suitable examples in textiles.								
CO3	Apply t	he knowledge	of simulatior	n for product de	evelopment.		Apply			
CO4	Study	& Analyse the	e techno ecor	nomics of each	of the case st	tudies.	Analyse			
CO5	Evalua	Evaluate the end product usage. Analy								
Марр	ing with Pro	gramme Out	comes							
COs				POs						
005	1	2	3							
	-	L	3	4	5		6			
CO1	-	2	3	4 3	-		<u>6</u> -			
CO1 CO2	-		•	4 3 3	5 - 2		6 - -			
	- 2	2	3	-	-		6 - - -			
CO2	- - 2 3	2	3 3	3	-		6 - - -			

3 - Strong; 2 - Medium; 1 - Some

<u>Assessment Pa</u> Bloom's Category	Lab Experiments Assessment (Ma		Model Examination	End Sem Examination
• •	Lab	Activity	(Marks)	(Marks)
Remember	25	-	-	-
Understand	25	-	15	15
Apply	-	12	35	35
Analyse	-	13	50	50
Evaluate	-	-	-	-
Create	-	-	-	-
Total	50	25	100	100

BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

K.S.Rangasamy College of Technology – Autonomous R2022								
M. Tech Textile Technology								
	60 PTT 2P1 – Textile Product Development Laboratory							
Composion		Hours/Week			Credit	Ма	ximum Ma	rks
Semester	L	Т	Р	Hrs	С	CA	ES	Total
II	0	0	6	90	3	60	40	100

1. This lab will provide a practical understanding of process involved in textile product development, product characteristics and development of different textile products.

2. This lab also provides hands on experience of using different machineries/ equipments for textile product development

Lab	Manual

Hours:90

*SDG 9 – Industry Innovation and Infrastructure **SDG 3 – Good Health and Well Being ***SDG 7 – Affordable and Clean Energy

Course Designer(s)

Dr K Saravanan - saravanank@ksrct.ac.in

BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60	PTT	202
υυ	PII	222

Category	L	Т	Ρ	Credit
PC	0	0	2	0

- Students will develop their scientific and technical reading and writing skills that they need to understand and construct research articles.
- A term paper requires a student to obtain information from a variety of sources (i.e., Journals, dictionaries, reference books) and then place it in logically developed ideas.
- To identify the recent topics in the research area and formulate the problem
- To analyse the mathematical model for the identified problem
- To design and simulate/ develop prototype model.

Pre-requisites

• Nil

Course Outcomes

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

CO1		the relevant l s for the prefe			nal/internationa	l referred	Understand		
CO2		Develop scientific, technical reading and writing skills for the technical report preparation to apply it in their topics of research							
CO3	Apply	mathematical	ideas to any	problem in th	e research field	1	Apply		
CO4		nent and analy al application		us complex p	roblems in diffe	rent	Analyse		
CO5		Cultivate presentation skills to deliver their work in front of technically qualified audience							
Mappi	ing with Pro	ogramme Out	comes						
COs				POs					
003	1	2	3	4	5		6		
CO1	3	-	2	-	-		-		
CO2	2	3	2	-	-		-		
CO3	3	-	3	-	-		-		
CO4	3	-	3	2	2		-		
CO5	-	3	-						
3 . St	rong: 2 - Me	dium; 1 - Som	e						

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)				
	Lab	Activity			
Remember	-	-			
Understand	25	-			
Apply	25	12			
Analyse	-	13			
Evaluate	-	-			
Create	-	-			
Total	50	25			

BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

K.\$	S.RANGA			ECHNOLOGY			2022	
				I PAPER AND		२		
				Textile Techno			·	
Semester -		Hours / Wee T	ек Р	Total hrs	Credit C	CA Max	kimum M ES	Iarks Total
	0	0	<u>г</u> 2	30	0	100	0	100
The work involv	-	-			Ŭ	100	, v	100
 Selecting a su Stating an obj Collecting the Preparing a w Studying the p analysing each p Preparing a w Linking the pa Preparing con Writing the Fir Please keep a fil Activities to be c 	bject, nai ective. relevant orking ou oapers an oaper. orking ou pers and iclusions l nal Paper le where t	rrowing the s bibliography tline. d understan tline. preparing a based on the and giving f the work card	(at least 15 (at least 15 ding the aut draft of the e reading of inal Present	journal papers hors contributio paper. all the papers. ation	ons and cr	itically		[9]
Activity			Instructio	ons		Submiss ion week	EVal	uation
Selection of area of interest and Topic Stating an Objective	_ objecti	An area of interest, topic has to be selected and objective to be framed			2 nd week	3 % Based of thou current relevar	•	
Collecting Information about chosen area & topic	society 2.List 2 3.List 3 4. List 5. List New 6. List 7. Atta	5 List 5 web presences (mailing lists forums				3rd week	3% (the se informa must b specific interna and na standa	ation e area c and of tional tional
Collection of Journal papers in the topic in the context of the objective – collect 20 & then filter	using digita • Wher • Pick ways mean • Favo And • Favo indicat recent • Pick a gain a • Find your schem • Mark	g- Based on al libraries ar picking pap papers that a and/or that a ingful survey ur papers fro conferences ur—firstllor fo ed in other p papers, a recent surv an overview, relationships topic area (o e/categoriza in the hard o or section/se	the objective and Google S pers to read are related to are in the sa y can be write oundational people's survey vey of the file s with respection classification copy of pape	- tryto: o each other in ame field so tha tten wn journals llpapers in the f veypaper),Favo eld so you can o ct to each other	some at a field (as bur more quickly r and to mplete	4th week	6% (the standa papers reason selection	and for

Bos Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Reading and notes for first 5 papers	 Reading Paper Process For each paper form a Table answering the following questions: What is the main topic of the article? What was/were the main issue(s) the author said they want to discuss? Why did the author claim it was important? How does the work build on other's work, in the author's opinion? What simplifying assumptions does the author claim to be making? What did the author do? How did the author claim they were going to evaluate their work and compare it to others? What did the author say were the limitations of their research? What did the author say were the important directions for future research? Conclude with limitations/issues not addressed by the paper (from the perspective of your survey) 	5th week	8% (the table given should indicate your understanding of the paper and the evaluation is based on your conclusions about each paper)
Reading and notes for next5 papers	Repeat Reading Paper Process	6th week	8% (the table given should indicate your understanding of the paper and the evaluation is based on your conclusions about each paper)
Reading and notes for final 5 papers	Repeat Reading Paper Process	7 th week	8% (the table given should indicate your understanding of the paper and the evaluation is based on your conclusions about each paper)
Draft outline 1 and Linking papers	Prepare a draft Outline, your survey goals, along with a classification / categorization diagram	8 th week	8% (this component will be evaluated based on the linking and classification among the papers)
Abstract	Prepare a draft abstract and give a presentation	9 th week	6% (Clarity, purpose and conclusion) 6% Presentation & Viva Voce
Introduction Background Sections of	Write an introduction and background sections	10 th week 11 th wee	5% (clarity)
the paper	Write the sections of your paper based on the classification / categorization diagram in keeping with eting held on 12/05/2023	k	10% (this component will BoS Chairman

Passed in BoS Meeting held on 12/05/2023 Approved in Academics Council Meeting held on 03/06/2023

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	the goals of your survey		be evaluated based on the linking and classification among the papers)
Conclusions	Write your conclusions and future work	12 th week	5% (conclusions – clarity and your ideas)
Final Draft	Complete the final draft of your paper	13 th week	10% (formatting, English, Clarity and linking) 4% Plagiarism Check Report
Seminar	A brief 15 slides on your paper	14 th & 15 th week	10% (based on presentation and Viva-voce)



K.S. RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215

(An Autonomous Institution affiliated to Anna University)

COURSES OF STUDY

(For the candidates admitted in 2024-2025)

SEMESTER III

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
		THEORY						
1.	60 PTT 301	Protective Textiles	PC	3	3	0	0	3
2.	60 PTT E4*	Professional Elective IV	PE	3	3	0	0	3
3.	60 PTT E5*	Professional Elective V	PE	3	3	0	0	3
4.	60 PTT E6*	Professional Elective VI	PE	3	3	0	0	3
		PRACTICALS						
5.	60 PTT 3P1	Project Work - Phase I	CG	12	0	0	12	6
		Total		27	15	0	12	18

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K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215

(An Autonomous Institution affiliated to Anna University)

M.E. / M.Tech. Degree Programme

SCHEME OF EXAMINATIONS

(For the candidates admitted in 2024-2025)

THIRD SEMESTER

S.	Course Code		Duration of			S	Minimum Marks for Pass in End Semester Exam	
No.	Course Code	Name of the Course	Internal Exam	Continuous Assessment*		Max. Marks	End Semester Exam	Total
		THI	EORY					
1.	60 PTT 301	Protective Textiles	2	40	60	100	45	100
2.	60 PTT E4*	Professional Elective IV	2	40	60	100	45	100
3.	60 PTT E5*	Professional Elective V	2	40	60	100	45	100
4.	60 PTT E6*	Professional Elective VI	2	40	60	100	45	100
		PRA	CTICAL					
5.	60 PTT 3P1	Project Work - Phase I	3	60	40	100	45	100

*CA evaluation pattern will differ from course to course and for different tests. This will have to be declared in advance to students. The department will put a process in place to ensure that the actual test paper follow the declared pattern.

**End semester Examination will be conducted for maximum marks of 100 and subsequently be reduced to 60 marks for theory End Semester Examination and 40 marks for practical End semester Examination.

BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

60 DTT 201	Protective Textiles	Category	L	Т	Р	Credit
60 PTT 301	Protective Textiles	PC	3	0	0	3

- To know the functional requirements of protective clothing •
- To learn about selection of fibre, yarn and fabric for protective clothing •
- To evaluate protective clothing products. •

Pre-requisites

• Nil

Course Outcomes

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

•••••••							
CO1	Gai	n knowledge or	n selection of	fibres for pro	tective clothi	ng	Understand
CO2	Ga	n knowledge or	es	Understand			
CO3	Ana	alysis the clothir		Analyse			
CO4		derstand differe	Understand				
CO5		alysis and evalu hing	ation the diffe	erent methods	of testing pr	otective	Analyse
Mappi	ing with P	rogramme Out	tcomes				
COs				POs			
COS	1	1 2 3 4 5					
CO1	2	-	-	3	2		2
CO2	1	_	2	3	3		2

CO1	2	-	-	3	2	2
CO2	1	-	2	3	3	2
CO3	2	2	2	3	2	2
CO4	-	-	2	2	2	2
CO5	3	3	3	2	3	3
3 - St	rong: 2 - Mec	lium [.] 1 - Som	e			

Shorig, Z mealum, i JOILIE

Bloom's		sessment Tests rks)	End Sem Examination (Marks		
Category	1	2			
Remember	30	10	20		
Understand	30	10	20		
Apply	-	10	20		
Analyse	-	30	40		
Evaluate	-	-	-		
Create	-	-	-		
Total	60	60	100		

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

K.S.Rangasamy College of Technology – Autonomous R2022 M. Tech Textile Technology G0 PTT 301 – Protective Textiles Semester L T P Hours C CA ES Total III 3 0 0 45 3 40 60 100 Fibre Requirements 0 0 45 3 40 60 100 Suitability and properties of high performance fibres for various protective clothing – 9 9 hcmail 9 hcmail 7 7 8 7	Syllabus								
60 PTT 301 - Protective Textiles Semester Hours/Week Total Credit Maximum Marks III 3 0 0 45 3 40 60 100 ibre Requirements Suitability and properties of high performance fibres for various protective clothing - //enemical composition and physical structure 9 9 Aran and Fabric Requirements Fypes of yarns; woven, knitted and non - woven fabric structures, methods of production, 9 9 Ottohing Construction Method of construction of garments according to various protective end uses like protection grainated in different places; use of inter lining and composite; 3D structures; high ech textiles - variable electronics; protective garments for industrial and apparel end uses 9 Finishing of Protective Clothing Fypes of finishes - fire retardant finishes, water repellent finishes, anti - microbial finishes; protective finishes for health care garments 9 Quality Evaluation Evaluation and chemicals; method of application of finishes; or thermical, electrostatic and electrical resistivity, impact properties; ASTM standards for protective garments 9 Adanur S., "Wellington sears handbook of Industrial textiles." Technomic publishing co. inc., 1995, ISBN 1 - 56676 - 340 - 1 1 Allison Mathews. and Martin Hardingham, "Medical and Hygiene Textile Production - A hand book" Inter		K.S.R	angasamy				nous R202	2	
Bemester Hours/Week Total Hours Credit Maximum Marks III 3 0 0 45 3 40 60 100 Fibre Requirements Suitability and properties of high performance fibres for various protective clothing – themical composition and physical structure 9 Aran and Fabric Requirements Fypes of yarns; woven, knitted and non - woven fabric structures, methods of production, affect of structure on their performance 9 Construction Method of construction of garments according to various protective end uses like protection against cold, ballistic protection, use of different fabric type (knitted, woven, and Non-woven), soated / laminated in different places; use of inter lining and composites; 3D structures; high ech textiles – variable electronics; protective garments for industrial and apparel end uses 9 Finishing of Protective Clothing Types of finishes - fire retardant finishes, water repellent finishes, anti - microbial finishes; protective finishes for health care garments 9 Quality Evaluation Sultation of protective fabrics; desirable properties of protective textiles, method of testing or thermal protective performance, abrasion and wear resistance, evaluation of resistance to mildew, ageing, sunlight, chemical, electrostatic and electrical resistivity, impact properties; ASTM standards for protective garments 9 1. Adanur S., "Wellington sears handbook of Industrial textiles" Technomic publishing co. inc., 1995, IS									
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L I P Hours C CA ES Tota Fibre Requirements 3 0 0 45 3 40 60 100 Fibre Requirements Suitability and properties of high performance fibres for various protective clothing – 9 Aran and Fabric Requirements Ypes of yarns; woven, knitted and non - woven fabric structures, methods of production, against cold, ballistic protection 9 Vefted of structure on their performance 20 Knitted, woven, and Non-woven), 9 9 Souted / laminated in different places; use of inter lining and composites; 3D structures; high ech textiles – variable electronics; protective garments for industrial and apparel end uses 9 Finishing of Protective Clothing Types of finishes - fire retardant finishes, water repellent finishes, anti - microbial finishes; protective finishes for health care garments 9 Quality Evaluation Examents 9 Exat and right performance, abrasion and wear resistance, evaluation of resistance to inildew, ageing, sunlight, chemical, electrostatic and electrical resistivity, impact properties; ASTM standards for protective garments 9 Adanur S., "Wellington sears handbook of Industrial textiles" Technomic publishing co. inc., 1995, ISBN : 1 – 56676 – 340 – 1 1 Adanur S., "Wellington sears	Semester								
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Suitability and properties of high performance fibres for various protective clothing – 9 Arm and Fabric Requirements 9 Fypes of yarns; woven, knitted and non - woven fabric structures, methods of production, generation of structure on their performance 9 Clothing Construction 9 Method of construction of garments according to various protective end uses like protection against cold, ballistic protection, use of different fabric type (knitted, woven, and Non-woven), goated / laminated in different places; use of inter lining and composites; 3D structures; high ech textiles – variable electronics; protective garments for industrial and apparel end uses 9 Finishing of Protective Clothing 9 Fypes of finishes - fire retardant finishes, water repellent finishes, anti - microbial finishes; brotective finishes for health care garments 9 Quality Evaluation 9 Evaluation of protective fabrics; desirable properties of protective textiles, method of testing or thermal protective performance, abrasion and wear resistance, evaluation of resistance to mildew, ageing, sunlight, chemical, electrostatic and electrical resistivity, impact properties; ASTM standards for protective garments 45 Method Sign Matrin Hardingham, "Medical and Hygiene Textile Production – A hand book" Intermediate Technology Publications, 1994. 45 Reference(s): 1 Anand S.C., Kennedy J.F., Miraftab.M and Rajendran.S., "Medical textiles and biomaterials for health care", Woodhead Publishing Ltd, Cambridge, UK,2006, IS		1	0	0	45	3	40	60	100
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Finishing of Protective Clothing 9 Types of finishes - fire retardant finishes, water repellent finishes, anti - microbial finishes; 9 Chemical finishes against radiation and chemicals; method of application of finishes; 9 Duality Evaluation 9 Evaluation of protective fabrics; desirable properties of protective textiles, method of testing or thermal protective performance, abrasion and wear resistance, evaluation of resistance to mildew, ageing, sunlight, chemical, electrostatic and electrical resistivity, impact properties; 9 ASTM standards for protective garments 9 1. Adanur S., "Wellington sears handbook of Industrial textiles" Technomic publishing co. inc., 1995, ISBN : 1 – 56676 – 340 – 1 45 2. Allison Mathews. and Martin Hardingham, "Medical and Hygiene Textile Production – A hand book" Intermediate Technology Publications, 1994. 8 Reference(s): 1. Anand S.C., Kennedy J.F., Miraftab.M and Rajendran.S., "Medical textiles and biomaterials for health care", Woodhead Publishing Ltd, Cambridge, UK,2006, ISBN 1- 85573-683-7. 2 2. Anand S.C., "Medical Textiles", Textile Institute, Manchester, 2001, ISBN:185573494X. 3. 3. Chellamani K.P. and Chattopadhyyay D., "Yarns and Technical Textiles", SITRA, 1999.	Method of co against cold, coated / lam	onstruction o ballistic pro inated in diff	tection, use erent place	of differents; use of ir	t fabric type (nter lining and	(knitted, wove d composites	en, and Noi ; 3D structi	n-woven), ures; high	9
Evaluation of protective fabrics; desirable properties of protective textiles, method of testing or thermal protective performance, abrasion and wear resistance, evaluation of resistance to nildew, ageing, sunlight, chemical, electrostatic and electrical resistivity, impact properties; 9 ASTM standards for protective garments 9 Image: Astronomic protective garments 45 Image: Adamur S., "Wellington sears handbook of Industrial textiles" Technomic publishing co. Inc., 1995, ISBN : 1 – 56676 – 340 – 1 45 Image: Adamur S., "Image: Adamur S., "Wellington Protective Production – A hand book" Intermediate Technology Publications, 1994. 46 Reference(s): 1 Anand S.C., Kennedy J.F., Miraftab.M and Rajendran.S., "Medical textiles and biomaterials for health care", Woodhead Publishing Ltd, Cambridge, UK,2006, ISBN 1- 85573-683-7. 47 Image: Adamur S.C., "Medical Textiles", Textile Institute, Manchester, 2001, ISBN:185573494X. 48	Types of fin chemical fin	ishes - fire i ishes agains	retardant fir st radiation	and chen					9
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 inc., 1995, ISBN : 1 – 56676 – 340 – 1 Allison Mathews. and Martin Hardingham, "Medical and Hygiene Textile Production – A hand book" Intermediate Technology Publications, 1994. Reference(s): Anand S.C., Kennedy J.F., Miraftab.M and Rajendran.S., "Medical textiles and biomaterials for health care", Woodhead Publishing Ltd, Cambridge, UK,2006, ISBN 1- 85573-683-7. Anand S.C., "Medical Textiles", Textile Institute, Manchester, 2001, ISBN:185573494X. Chellamani K.P. and Chattopadhyyay D., "Yarns and Technical Textiles", SITRA, 1999. 									
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 health care", Woodhead Publishing Ltd, Cambridge, UK,2006, ISBN 1- 85573-683-7. Anand S.C., "Medical Textiles", Textile Institute, Manchester, 2001, ISBN:185573494X. Chellamani K.P. and Chattopadhyyay D., "Yarns and Technical Textiles", SITRA, 1999. 									
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3. Chellamani K.P. and Chattopadhyyay D., "Yarns and Technical Textiles", SITRA, 1999.	2. Anan	d S.C., "Med	lical Textile	s", Textile I	nstitute, Man	chester, 200	1, ISBN:18	5573494X.	
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SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy

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Course	e Contents and Lecture Schedule	
S.No	Торіс	Total
		Hours
Modu	le 1: Fibre Requirements	
1.1	Suitability of high-performance fibres for various protective clothing	2
1.2	Chemical composition of high-performance fibres	2
1.3	Physical structure of high-performance fibres	2
Modu	le 2: Yarn and Fabric Requirements	
2.1	Types of yarns: woven, knitted, and non-woven fabric structures	2
2.2	Methods of production of yarns and fabric structures	3
2.3	Effect of fabric structure on performance	2
Modu	le 3: Clothing Construction	
3.1	Methods of garment construction for protective end uses like cold and	3
	ballistic protection	
3.2	Use of different fabric types (knitted, woven, and non-woven) in protective	3
	clothing	
3.3	Coated/laminated fabrics and use of interlining and composites	3
3.4	3D structures and high-tech textiles – variable electronics in protective	3
	garments	
3.5	Protective garments for industrial and apparel end uses	3
Modu	le 4: Finishing of Protective Clothing	
4.1	Types of finishes – fire retardant, water repellent, antimicrobial finishes	3
4.2	Chemical finishes against radiation and chemicals	3
4.3	Methods of applying finishes for healthcare protective garments	3
Modu	le 5: Quality Evaluation	
5.1	Evaluation of protective fabrics and desirable properties	3
5.2	Testing methods for thermal protective performance, abrasion, and wear	3
	resistance	
5.3	Evaluation of resistance to mildew, ageing, sunlight, chemical, electrostatic	3
	and electrical resistivity, and impact properties	
5.4	ASTM standards for protective garments	3
Course	Designer(s)	

1. Dr Saravanan.K - saravanan.k@ksrct.ac.in

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT 3P1	PROJECT WORK – PHASE I	Category	L	Т	Ρ	Credit
00 F11 3F1	FROJECT WORK - PHASET	PC	0	0	12	6

- To impart practical knowledge to the students and also to make them to carry out the technical procedures in their project work.
- To provide an exposure to the students to refer, read and review the research articles, journals and conference proceedings relevant to their project work and placing this as their beginning stage for their final presentation
- To Independently carry out research / investigation and development work to solve practical problems in the field of Textile
- To write and present a substantial technical report / document in the field of Textile
- To demonstrate the Research findings in Textile domain

Pre-requisites

• Nil

Course Outcomes

On the su	ccessful o	completion of	the course, s	students will b	be able to		
CO1	-	d journals and		n as books, na ource persons			Understand
CO2		ferent experii ational/analyt		ques/differen	t software/		Apply
CO3	Design	and develop	an experime	ntal set up/ e	quipment/tes	ting.	Analyse
CO4				/ equipment's analyzing the		ogical	Analyse
CO5	Work ir	n a research e	environment	or in an indus	trial environn	nent	Apply
Mapping	with Prog	gramme Out	comes				·
COs				POs			
COS	1	2	3	4	5		6
CO1	3	-	-	-	2		2
CO2	2	-	3	-	2		2
CO3	3	-	3	3	3		3
CO4	3	-	3	2	3		3
CO5	2	-	-	-	3		3
2 Strong	1. 2 - Mod	lium; 1 - Som	<u></u>				

Assessment Pattern

Rev	view I (R1)		Review	w II (R2)	Revie	w III (R	3)		Internal
	(Inte	rnal A	ssessme	ent: 100 M	arks)				
Literature Survey	Topic Identification & Justification	Work Plan	Approach	Conclusion	Demo- Existing System	Presentation	Report	Total (R1+ R2+R3)	100
10	10	10	20	20	10	10	10	100	

Passed in BoS Meeting held on 12/05/2023 Approved in Academics Council Meeting held on 03/06/2023



	K.\$	S.Rangasa	amy Colle	ege of Tec	hnology –	Autonom	ous R2022	2	
					e Technol				
		60	PTT 3P1	- PROJEC	T WORK	– PHASE			
Semeste	-	Hours/Week		ek	Total	Credit	Ma	ximum Ma	arks
Ochicate		L	Т	Р	Hrs	С	CA	ES	Total
=		0	0	12	90	6	100	-	100
Methodology	 The analy data Ser diss Thr Eac Inte The proble sta Th report The Proje Coordinate 	e Project sis of a, determin minar shou sertation w ee reviews ch review h ernal evalu e final exar em tement an e prelimin t e work has ct ordinator	should in ning solution ork as per solution be control of the mination solution solution d a literature ary results solution be pro-	volve scie on and mu ed on the a the common onducted b evaluated f to be done hall consis ure review s (if availa esented in	st preferab area in which on instruct by a commit for 100 mar of 100 mar for 100 mar t of the pre		gn, genera t the individ lidate has branches ect experts report con nay also t	ation/colled dual contri undertake of M.E/M. s usisting of be discuss	bution n the Tech a detailed ed in the

*SDG 9 – Industry Innovation and Infrastructure

**SDG 3 – Good Health and Well Being

***SDG 7 – Affordable and Clean Energy

Course Designer(s)

Dr Bharani Murugesan - bharanim@ksrct.ac.in

BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

K.S. RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215

(An Autonomous Institution affiliated to Anna University)

COURSES OF STUDY

(For the candidates admitted in 2024-2025)

SEMESTER IV

S.No.	Course Code	Course Title	Category	Contact Periods	L	т	Ρ	С
1.	60 PTT 4P1	Project Work - Phase II	CG	48	0	0	24	12
		Total		48	0	0	24	12



Passed in BoS Meeting held on 12/05/2023 Approved in Academics Council Meeting held on 03/06/2023

K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215

(An Autonomous Institution affiliated to Anna University)

M.E. / M.Tech. Degree Programme

SCHEME OF EXAMINATIONS

(For the candidates admitted in 2024-2025)

FOURTH SEMESTER

S.	Course	Name of the Course	Duration of	Weighta	ge of Mark	S	Minimum for Pass i Semes Exan	in End ter
No.	Code	Name of the Course	Internal Exam	Continuous Assessment*		Max. Marks	End Semester Exam	Total
		PRAC	CTICAL					
1.	60 PTT 4P1	Project Work - Phase II	3	60	40	100	45	100

*CA evaluation pattern will differ from course to course and for different tests. This will have to be declared in advance to students. The department will put a process in place to ensure that the actual test paper follow the declared pattern.

**End semester Examination will be conducted for maximum marks of 100 and subsequently be reduced to 60 marks for theory End Semester Examination and 40 marks for practical End semester Examination.

BoS Chairman Head of the De epartment Department of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

60 PTT 4P1	PROJECT WORK – PHASE II	Category	L	Т	Ρ	Credit
00 F11 4F1	PROJECT WORK - PHASE II	PC	0	0	24	12

• This enables and strengthens the students to carry out the project on their own and to implement their innovative ideas to forefront the risk issues and to retrieve the hazards by adopting suitable assessment methodologies and staring it to global.

Pre-requisites

60 PTT 3P1

Cours	se Outcom	es					
On the	e successfu	I completion of	the course, s	students will b	be able to		
CO1		ibe the probler pic of the ident			nmarize the I	iterature for	Apply
CO2	Illustra	ate the suitable	e design of ex	periments inc	luding experi	mental plan.	Apply
CO3	Expla work.	in the concepts	s of design ar	nd developme	nt of selected	I research	Apply
CO4	Const title	ruction, and fa	brication of in	novative proc	duct/system fo	or the project	Analyse
CO5		arious tools of w relevant con	•	tatistical anal	ysis for the da	ata in order	Apply
Марр	ing with Pr	ogramme Out	comes				
COs				POs			
003	1	2	3	4	5		6
CO1	3	-	2	-	-		2
CO2	2	-	3	2	2		2
CO3	3	-	3	3	3		2
CO4	3	-	3	3	3		3
CO5	2	3	3	2	3		3
3 - St	rong; 2 - M	edium; 1 - Sorr	ne				

Assessment Pa	ittern				
(Internal Asse	Intern essment: 60 Mar	al Assessment ks + End Seme		on: 40 Marks)	
Items	Review 1	Review 2	Review 3	Publication*	End Semester (40)
Marks	5	10	15	30	40
		Total interr	nal marks(60)		

Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

		U	, 0	of Technolo Textile Tech	0,			
		60 P	FT 4P1 - PR	OJECT WO	RK – PHAS	SE II		
Semester	ŀ	lours/Wee	k	Total	Credit	Ма	arks	
Semester	L	Т	Р	Hrs	С	CA	ES	Total
III	0	0	24	90	12	60	40	100
prescribed for as provided introduction	by the depa	rtment. The	e candidate	has to prepa	are a detaile	d project rej	port consist	ting of
		م اممینام م	بطد مم دانمده ا				ممالم مم	
(experiment The report n	nust bring o	ut the concl	usions of th	e work and f	tuture scope	for the stud	dy. The wor	cussion. k has to

*SDG 9 - Industry Innovation and Infrastructure

SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy

Course Designer(s)

Dr Bharani Murugesan - bharanim@ksrct.ac.in

Jonnie BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT E11	Alternative Spinning Systems	Category	L	Т	Ρ	Credit
60 PTT ETT	Alternative Spinning Systems	PC	ი	0	0	3

- To understand theory of yarn formation by rotor spinning,
- To understand friction spinning, air-jet spinning and other spinning systems
- To know effect of process parameters used in the spinning system on yarn quality.

Pre-requisites

• Nil

Course Outcomes

On the successful completion of the course, students will be able to									
CO1	Explai	Explain the process parameters for producing rotor spun yarn. Understand							
CO2	Under	stand DREF-	2, DREF-3 sp	oinning syster	ms	Understand			
CO3	Gain I	knowledge on	air vortex sp	inning technio	que.	Understand			
CO4	Under	stand the cor	ncept of new :	spinning tech	inologies	Understand			
CO5	Gain I	knowledge on	wrap yarn ai	nd their applic	cations.	Understand			
Mappi	ing with Pro	gramme Out	comes						
COs				POs					
COS	1	2	3	4	5	6			
CO1	3	-	3	3	2	2			
CO2	-	-	3	3	2	2			
CO3	-	-	3	3	2	2			
CO4	-	-	3	3	2	2			
CO5	-	3 2 2 2							
3 - St	3 - Strong; 2 - Medium; 1 - Some								

Assessment Pattern

Bloom's		ssessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	30	34
Understand	30	30	66
Apply	-	-	-
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Syllabu	S										
K.S.Rangasamy College of Technology – Autonomous R2022											
M. Tech Textile Technology											
60 PTT E11- Alternative Spinning Systems											
Electi	ve F	lours/Wee		Total	Credit		kimum Mar				
	L	<u> </u>	P	Hours	C	CA	ES	Total 100			
I 3 0 0 45 3 40 60											
Rotor Spinning Principle of open end spinning; description of the working of the rotor spinning; requirements of the raw materials; preparation of the sliver for rotor spinning; yarn formation and its structure; yarn withdrawal and winding; design of rotor, opening roller, transport tube, navel and their implications on production and yarn quality; developments in rotor spinning machine; production limits; process control; techno economic comparison with ring spinning.											
Principle spinning applicat limitatio		material re	quirement;	effect of pro	ocess variab	les on yar	n quality;	9			
Descrip applied requirer	Spinning tion of the yarn in this machin- nent; process va	; structure iables; pro	e and qua	lity of the a	air-jet spun			9			
Product	Spinning Techn ion of yarn in PL roduction of doub	Yfil, self twi		atic, Bobtex	spinning syst	tems; worki	ng details	9			
	farns arns and core sp ion; yarn charact				nomics of th			6			
Text Bo	ok(c):					101	al Hours:	45			
1 L	⊿wrence C. A., " SBN-13: 978 1 8			ning technolo	ogy" Wood he	ead publishi	ng, 2010,				
2. ł	Klein W., "Rieter	Manual of s	pinning", V	ol.5&6, Ri <mark>ete</mark>	r Machine W	orks, Winte	rthur, 2014.				
Referer											
1. (Oxtoby E., "Spun	Yarn Tech	nology", Bu	tterworths, Lo	ondon, 2001.						
2. J	Klein W., "New S	oinning Me	thods ", The	e Textile Instit	tute, Manche	ster, 2003.					
3.	Dyson E., "Rotor Stock Port, 2003.	Spinning, T	echnical ar	nd Economics	s Aspects ", ⊺	Fextile Trad	·				
	Salbotra K.R. and Ishtiague S.M. "Rotor Spinning, its advantages." Limitations and Prospects										
	- Industry Innov			е							

SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy



Course	e Contents and Lecture Schedule	
S.No.	Торіс	Total Hours
1.1	Principle of Open End Spinning	1
1.2	Description of Rotor Spinning: Working, Yarn Formation, and Structure	2
1.3	Raw Material Requirements and Sliver Preparation for Rotor Spinning	2
1.4	Design of Rotor, Opening Roller, Transport Tube, Navel, and Their Impact on Yarn Quality and Production	2
1.5	Developments in Rotor Spinning Machines: Production Limits and Process Control	2
1.6	Techno-Economic Comparison of Rotor Spinning with Ring Spinning	3
2.1	Principle of Yarn Formation in Friction Spinning: DREF-2 and DREF-3 Systems	2
2.2	Developments in Friction Spinning, Raw Material Requirements, and Effect of Process Variables on Yarn Quality	2
2.3	Applications and Economic Considerations of Friction Spinning for Different End Products	2
3.1	Air-Jet Spinning: Yarn Production Process and Feasibility of Higher Draft	2
3.2	Structure and Quality of Air-Jet Spun Yarn and Raw Material Requirements	2
3.3	Production Using Airvortex System: Process Variables and Applications	2
4.1	Introduction to Other Spinning Technologies: PLYfil, Self Twist, Electrostatic, and Bobtex Spinning Systems	2
4.2	Working Details and Production of Double-Rove Yarns	2
5.1	Wrap Yarns and Core Spun Yarns: Production Methods and Use of Raw Materials	2
5.2	Economics of Wrap Yarn Production and Core Spun Yarn Production	2
5.3	Yarn Characteristics and Applications of Wrap and Core Spun Yarns	2

Course Designer(s)

1. Dr Bharani Murugesan - bharanim@ksrct.ac.in

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 DTT E42	Characterization of Textile	Category	L	Т	Ρ	Credit
60 PTT E12	Polymers	PC	3	0	0	3

- To enable the students to learn about different characteristics of polymers.
- To understand the production of textile fibres and their evaluation.
- To gain knowledge on molecular structure.

Pre-requisites

• Nil

Course Outcomes

On the successful completion of the course, students will be able to										
CO1		Gain knowledge on the dynamics of molecular weight Understand								
CO2		rstand molecu			-	Understand				
CO3	Analy	sis of differen	t thermal prop	perties		Analyse				
CO4	Gain I	knowledge on	optical & ele	ctron microso	сору	Understand				
CO5	Under	rstand surface	e energy mea	surements		Understand				
Mappi	Mapping with Programme Outcomes									
COs				POs						
COS	1	2	3	4	5	6				
CO1	3	2	3	2	2	2				
CO2	2	2	3	2	2	2				
CO3	3	2	3	2	2	2				
CO4	2	1	3	2	2	2				
CO5	2	2 2 3 2 2 2								
3 - Str	3 - Strong; 2 - Medium; 1 - Some									

Assessment Patte	ern		
Bloom's		ssessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	10	20
Understand	30	10	20
Apply	-	10	20
Analyse	-	30	40
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Syllabus			<u> </u>	· - · · ·			-	
	K.S.R	angasamy		f Technolog Fextile Techi	y – Autonon	nous R202	2	
		60 PTT F1				mers		
60 PTT E12 - Characterization of Textile Polymers Hours/Week Total Credit Maximum Mar								ks
Elective	L	T	P	Hours	C	CA	ES	Total
I	3	0	0	45	3	40	60	100
group analy	ution thermo	etry, light s	scattering,		d molecular gel permeati			9
Molecular S Molecular Si mass spectr	tructure ructure Char oscopy			ared, NMR, I	UV–visible, R	aman spec	ctroscopy,	9
	perties by di		•		erential therr		-	9
•					(-ray scatter	ing from (polymers,	9
Surface Pro	perties	me measu	rements by	B.E.T. meth	nod, porosim	etry, surfac	e energy	9
						Tot	al Hours:	45
Text Book(s	s):							
1. Stam	m M., "Polyn	ner surface	s and Interf	aces", Sprinę	ger 1 st edition	n, 2008.		
		ction to Phy	/sical Polyn	ner Science,"	Wiley Public	ation, 2015		
Reference(s	/							
	oell D. and W York. 2000.	/hite J.R, "I	Polymer cha	aracterization	n, Physical Te	echniques",	McGraw –	Hill,
2. Bill m	ayer, "Textb	ooks of Po	ymer Scien	ice," 3 rd editio	on., Wiley Pu	blication, 20	004.	
3. Gupta	a V.B. and K	othari V.K.,	"Man Mad	e Fibre produ	uction," Chap	man and H	all, 2001.	
	dustry Innova				,		, -	

*SDG 9 – Industry Innovation and Infrastructure **SDG 3 – Good Health and Well Being ***SDG 7 – Affordable and Clean Energy

00 BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

S.No.	Торіс	Total Hours
1.1	Introduction to Polymer Solution Thermodynamics	1
1.2	Molecular Weight and Dimensions by End Group Analysis and Osmometry	2
1.3	Molecular Weight Determination by Light Scattering and Viscometry	2
1.4	Gel Permeation Chromatography and High-Performance Liquid Chromatography	2
2.1	Introduction to Molecular Structure Characterization	1
2.2	Characterization Using Infrared and NMR Spectroscopy	2
2.3	Characterization Using UV–Visible and Raman Spectroscopy	2
2.4	Characterization Using Mass Spectroscopy	1
3.1	Introduction to Thermal Properties of Polymers	1
3.2	Thermal Properties by Differential Scanning Calorimetry (DSC) and Differential Thermal Analysis (DTA)	2
3.3	Thermo Gravimetry (TGA) and Thermo-Mechanical Analyzer (TMA)	2
3.4	Dynamic Mechanical and Dielectric Analysis	2
4.1	Optical and Electron Microscopy: TEM, SEM, and AFM	2
4.2	X-ray Scattering from Polymers and Briefregence	2
4.3	Crystallinity by Density Measurements	1
5.1	Surface Area and Pore Volume Measurements by B.E.T. Method	2
5.2	Porosimetry for Surface Area Measurement	2
5.3	Surface Energy and Particle Size Measurements	2

Course Designer(s)

1. Mrs C Premalatha - premalatha@ksrct.ac.in

00 BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 DTT E12	Medical Textiles	Category	L	Т	Ρ	Credit
60 PTT E13	Medical Textiles	PC	3	0	0	3

- To understand different types of biomaterials
- To gain knowledge biomedical application of textile structures.
- To understand implantable products.

Pre-requisites

• Nil

Course Outcomes

oou se outcomes										
On the successful completion of the course, students will be able to										
CO1	Gain k	Gain knowledge on materials available for biomedical applications Understand								
CO2	Explai	n application	of health car	e and its by-p	roducts		Understand			
CO3	Select	bandages fo	r various end	uses.			Apply			
CO4	Under	stand the diff	erent types o	f wound dres	sings		Understand			
CO5	Under	stand the pra	ctical uses of	f implantable	products		Understand			
Mapping with Programme Outcomes										
COs –				POs						
COS	1	2	3	4	5		6			
CO1	3	2	3	3	2		2			
CO2	2	2	3	3	2		2			
CO3	2	1	3	2	2		2			
CO4	2	2 2 3 2 2 2								
CO5	2	1 3 2 2 2								
3 - Strong; 2 - Medium; 1 - Some										

Assessment Patte	ern		
Bloom's		ssessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	10	10
Understand	30	20	60
Apply		30	30
Analyse			-
Evaluate			-
Create			-
Total	60	60	100

formin Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Syllabus											
	K.S.R	angasamy			y – Autonor	nous R202	2				
M. Tech Textile Technology											
				3 - Medical	1						
Elective		ours/Wee		Total	Credit		ximum Mar	r ks Total			
	L I P Hours C CA ES										
I 3 0 0 45 3 40 60 Biomaterials Image: Second S											
	ials als-introductior	Classifier	ations and k	oboviour of	Difforont Typ	oc of Rioma	toriale :	5			
	olymeric and bi						1013,	5			
	re and Hygien	<u> </u>									
	ised healthcare			ta, applicatio	n of none to	obnolo <i>gy</i> i	o modical				
	textiles; advan							10			
	plasma treated			in nearinea							
Bandage											
-	and pressure	garments	- elastic an	d non elastic	compressio	n bandages	s, support	40			
	tion bandages;							10			
end uses		0			U	0					
Wound D	Pressing										
	types, healing							10			
	antages and lir	nitations; T	Festing of w	ound dressin	igs; advance	d wound dr	essings				
•	ble Products										
	le products; su							10			
	ications; vascu				icial tendons	; scattolds	for tissue				
engineen	ng; intelligent te	xules for fr	iedical appl	Ications		То	al Hours:	45			
Text Boo	k(s):					10	ai nouis.	43			
	ison Mathews a	nd Martin	Hordinghon	n "Madiaal		Toytilo Dro	duction A				
1	nd book", Interr		•				uucion – A				
						L Taytilaa a	nd Diamata	riala far			
	and S.C., Kenn alth care", Woo				n S., Medica	ii Textiles a	nu biomate	nais ior			
Referenc		uneauru		. 2000.							
	on B. Park. and	Joseph D	Bronzino	"Biomaterial	s – Principles	and Applic	cations" CF	28			
	ess Boca Rator					, and , the line					
_	and S., " Medic					′3317X					
	prrocks A.R. and						BN: 855733	317X.			
4. Ac	anur S., " Welli	ngton Sear	s Handboo	k of Industria	I Textiles"' Te	echnomic P	ublishing C	o., Inc.,			
4. La	ncaster Pennyl	vania 2005	, ISBN 1-56	676-340-1.			5				
	Industry Innova			e							
*SUC 3	- Good Health	and Wall R	oina								

**SDG 3 – Good Health and Well Being

***SDG 7 – Affordable and Clean Energy

Course Contents and Lecture Schedule



S.No.	Торіс	Total Hours
1.1	Introduction to Biomaterials: Definitions and Overview	1
1.2	Classifications and Behavior of Different Types of Biomaterials: Natural, Polymeric, and Biological Biomaterials	2
1.3	Behavior and Properties of Biomaterials	2
2.1	Introduction to Textile-Based Healthcare and Hygiene Products	2
2.2	Application of Nanotechnology in Medical Hygiene Textiles	2
2.3	Advanced Textile Materials in Healthcare: Infection Control and Barrier Materials	2
2.4	Plasma-Treated Barrier Materials	2
3.1	Bandages and Pressure Garments: Elastic and Non-Elastic Compression Bandages	2
3.2	Support and Retention Bandages, Bandaging Textiles	2
3.3	Evaluation of Bandages and Their Use for Various Applications	2
4.1	Wound Types and Healing Process	2
4.2	Requirements of Wound Dressings	2
4.3	Wound Care Materials: Types, Advantages, and Limitations	3
4.4	Testing of Wound Dressings and Advanced Wound Dressings	3
5.1	Introduction to Implantable Products: Sutures, Vascular Grafts, Artificial Ligaments, and Artificial Tendons	3
5.2	Scaffolds for Tissue Engineering and Intelligent Textiles for Medical Applications	2
Course	Designer(s)	

1. Dr N Sukumar – sukumar@ksrct.ac.in

00 BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT E21	Theory of Drafting and	Category	L	Т	Ρ	Credit
OU FII EZI	Twisting	PC	3	0	0	3

- To enable the students to learn about the structure of ideal and real yarn,
- To enable the students to learn about migration of fibres in the yarn, breakage mechanism of yarn, mechanics of blended yarns
- To enable the students to learn about relationship between structure and property of yarns produced by different spinning systems..

Pre-requisites

• Nil

Course Outcomes

Cours	Course Outcomes											
On the	On the successful completion of the course, students will be able to											
CO1	Unde	Understand the Elements of yarn geometry Understand										
CO2	Gain	Gain knowledge on fibre migration for filament and spun yarns Understand										
CO3	Unde yarns	Understand the analysis of tensile behaviour of filament and spun Analyse										
CO4	Gain	knowledge on	mechanism	of blended ya	arn	Understand						
CO5	Unde	rstand structu	re properties	relationship f	or various sp	inning Understand						
005	syste	ms										
Mappi	ing with Pro	gramme Out	comes									
COs				POs								
COS	1	2	3	4	5	6						
CO1	3	2	3	3	2	2						
CO2	2	1	3	3	2	2						
CO3	3	2	3	2	2	2						
CO4	2	2	3	3	2	2						
CO5	2	2	3	3	2	2						
3 - Sti	3 - Strong; 2 - Medium; 1 - Some											

Assessment Pattern

Bloom's	Continuous A	ssessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	10	10
Understand	30	20	50
Apply	-	20	30
Analyse	-	10	10
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

Syllabus											
	K.S.R	angasamy		f Technolog		nous R202	2				
				Fextile Techi							
60 PTT E21 - Theory of Drafting and Twisting											
Elective	· · ·	lours/Wee		Total	Credit		ximum Mar	r ks Total			
II 3 0 0 45 3 40 60 Yarn Geometry 60 60											
Elements of diameter, pa of yarn; geor	yarn geom cking of fibr netry of fold	es in yarn;		x and its ap of packing d				9			
	aracteristics n; measure	ment of fi	bre migrat	t and spun ya ion in yarn;				9			
varn; effect	ensile beha of fibre pro perties of ya	perties and m; design c	d geometri	eakage - co cal configura ctures for cert	tion of yarn	on the te		9			
of properties	arity; measu of constitue	irement of t nt fibres an	d blend co	egularity; con mposition on				9			
Structure - Structure - p spinning, airj	roperty relat	tionship in y	/arns produ	uced from ring g systems.	g spinning, ro	•	_	9			
						Tot	tal Hours:	45			
1. fabric	e J.W.S., Gi s", Wiley Int	erscience, <i>i</i> artindale J.	2008 New ` G. and Sca	rdino F.L., "T				and			
Reference(s		ey mersele	10 0 , 2010	INCW IUIK,.							
1. Hearl Maryl	e J.W.S., Th and, 1998			nikrbayhat A.							
Z. Londo	on, 1999.			"The Mechan							
J. 1999,	ISBN-13: 9	78 1 87037	203 9.	ion: Theoretic	al aspects",	Textile Inst	itute publica	tion,			
*SDG 9 – Ind **SDG 3 – G	dustry Innov ood Health			Э							

SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy



Course Contents and Lecture Schedule

S.No.	Торіс	Total
		Hours
1.1	Introduction to Yarn Geometry: Elements of Yarn Geometry	1
1.2	Geometry of Helix and Its Application to Yarn Structures	2
1.3	Yarn Diameter and Packing of Fibers in Yarn	2
1.4	Estimation of Packing Density and Radial Packing Density	2
1.5	Geometry of Folded Yarns	2
2.1	Migration Characteristics in Continuous Filament and Spun Yarns	2
2.2	Effect of Various Parameters on Migration	2
2.3	Measurement of Fiber Migration in Yarn; Effect of Migration on Tensile	2
	Behavior and Hairiness	
3.1	Analysis of Tensile Behavior: Continuous Filament and Spun Yarn	2
3.2	Prediction of Yarn Breakage	1
3.3	Effect of Fiber Properties and Geometrical Configuration on Tensile and	2
	Bending Properties of Yarn	
3.4	Design of Yarn Structures for Functional Uses	1
4.1	Blended Yarn Mechanics: Blend Irregularity and Measurement of Blending Irregularity	2
4.2	Concept of Elongation Balance	2
4.3	Effect of Properties of Constituent Fibers and Blend Composition on Behavior	2
	of Blended Yarns	
5.1	Structure-Property Relationship in Yarns Produced from Ring Spinning, Rotor	3
	Spinning, Friction Spinning, and Airjet Spinning Systems	
5.2	Structure-Property Relationship in Yarns Produced from Other New Spinning	2
	Systems Designer(s)	

Course Designer(s)

1. Dr Bharani Murugesan - bharanim@ksrct.ac.in

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60 PTT E22	High performance and	Category	L	Т	Ρ	Credit
00 F 1 1 E 2 2	specialty fibres	PC	3	0	0	3

- To understand advanced spinning technology •
- To gain knowledge on manufacturing high performance fibres •
- To impart knowledge on the properties and applications of high performance fibre. •

Pre-requisites

• Nil

Course Outcomes

On the successful completion of the course, students will be able to									
CO1	Unders	tand the meth	nod of produc	ing high perfo	ormance fibres	6	Understand		
CO2	Gain kn	owledge on t	he industrial	applications of	of various fiber	ſS	Understand		
CO3	Unders	tand propertie	es and application	ations of fiber	s for medical	field	Understand		
CO4	Gain kn	owledge on s	speciality fibre	es and its app	lications		Understand		
CO5	Unders	tand the prop	erties of cher	nical and the	rmal resistant	fibers	Understand		
Mappir	ng with Pro	gramme Out	comes				•		
COs				POs					
COS	1	2	3	4	5		6		
CO1	3	2	3	3	2		2		
CO2	2	2	3	3	2		2		
CO3	2	1	3	2	2		2		
CO4	2	1	3	3	2		2		
CO5	2	2	3	3	2		2		
3 - Stro	3 - Strong; 2 - Medium; 1 - Some								

Strong, ∠ wealum,

Assessment Patte	ern		
Bloom's		ssessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	30	34
Understand	30	30	66
Apply	-	-	-
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

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Syllabus										
K.S.Rangasamy College of Technology – Autonomous R2022										
M. Tech Textile Technology										
60 PTT E22 - High performance and specialty fibres										
Elective	Н	ours/Wee		Total	Credit		kimum Mar			
	L	T	Р	Hours	С	CA	ES	Total 100		
••	II 3 0 0 45 3 40 60									
Advanced Spinning Technology Advances in conventional fibre forming process; gel spinning; liquid crystal spinning; electro- spinning, nano spinning.										
Manufacturi performance	rmance Fibro ng, properties polyethylene	and appl fibres; ce	ications of ramic fibres	glass fibres, S	basalt fibres	; carbon fit	ores, high	9		
Manufacturi and wool pro	rmance Fibro ng, properties otein fibres; s	and appli	cations of a	lginate fibres	; chitosan fib	res; regene	erated silk	9		
	profile fibres		and bi-cor	nponent fibre	es; film fibre	s and func	tionalized	9		
Resistant F Manufactur	ibres ing, properti	es and ap	plications	of chemical	and thermal			9		
						Tot	al Hours:	45		
	s): le J. W. S., "H and, 2009.	ligh Perfor	mance Fibr	es", Woodhe	ad Publishin	g Ltd., Cam	ıbridge,			
•	u T. and Phil	lips G.O., '	New Fibres	s", Woodhead	l Publishing L	_td., Englar	nd, 2010.			
Reference(0					
1. Kothari V. K., "Textile Fibres: Development and Innovations", Vol. 2, Progress in Textiles Publications, 2000.								, IAFL		
2. Peebles L.H., "Carbon Fibres", CRC Press, London, 2005.										
	dustry Innova Good Health a			9						

SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy

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Course Contents and Lecture Schedule

S.No.	Торіс	Total
	•	Hours
1.1	Introduction to Advances in Conventional Fibre Forming Processes	2
1.2	Gel Spinning and Liquid Crystal Spinning	3
1.3	Electro-Spinning and Nano-Spinning	3
2.1	Manufacturing, Properties, and Applications of Glass and Basalt Fibres	2
2.2	Manufacturing, Properties, and Applications of Carbon and High- Performance Polyethylene Fibres	2
2.3	Manufacturing, Properties, and Applications of Ceramic Fibres	1
3.1	Manufacturing, Properties, and Applications of Alginate Fibres	2
3.2	Manufacturing, Properties, and Applications of Chitosan Fibres	2
3.3	Manufacturing, Properties, and Applications of Regenerated Silk, Wool Protein, and Synthetic Biodegradable Fibres	2
4.1	Hollow and Profile Fibres: Properties and Applications	2
4.2	Blended and Bi-Component Fibres: Manufacturing and Applications	2
4.3	Film Fibres and Functionalized Fibres for Specific Applications	2
5.1	Introduction to Resistant Fibres: Manufacturing, Properties, and Applications of Chemical Resistant Fibres	2
5.2	Manufacturing, Properties, and Applications of Thermal Resistant Fibres	2
Course Designer(s)		

1. Dr Bharani Murugesan – bharanim@ksrct.ac.in



60 PTT E23	Nana Taabhalagy in Taxtilas	Category	L	Т	Ρ	Credit
00 F11 E23	Nano Technology in Textiles	PC	3	0	0	3

- To understand the concepts of nanotechnology.
- To know the applications of nanotechnology in textiles.
- To gain knowledge on the characterization of nano textiles.

Pre-requisites

• Nil

Course Outcomes

On the	successful o	completion of	the course, s	students will b	be able to						
CO1	Gain k	Gain knowledge on nano fibre and nano particles									
CO2	Unde	Understand the applications of nano fibres Unders									
CO3	Impai	Impart knowledge on various nano finishing									
CO4	Unde	rstand charac	cterization of	nano textiles			Understand				
CO5	Gain k	nowledge on	various type	s of nano cor	nposites and i	nano	Understand				
005	coatin	g technologie	s								
Mappin	ng with Pro	gramme Out	comes								
COs –				POs							
	1	2	3	4	5		6				
CO1	3	2	3	3	2		2				
CO2	2	2	3	3	2		2				
CO3	2	2	3	3	2		2				
CO4	3	2	3	3	2		2				
CO5	3	2	3	3	2		2				
3 - Stro	ong; 2 - Mec	lium; 1 - Som	е								

Assessment Patte	ern		
Bloom's		ssessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	30	34
Understand	30	30	66
Apply	-	-	-
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Formatio BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

	K.S.F	kangasamy			y – Autonon	nous R202	22	
		CO D		Textile Tech				
		lours/Wee		Total	gy in Textiles Credit		ximum Mar	ka
Elective			rk P	Hours		CA	KS Total	
11	3	0	0	45	3	40	ES 60	100
ntroductio	-	0	<u> </u>	10	Ŭ	10	00	100
Nano Tec Different ty nano mate	nnology: d pes of pro rials used in	cess: Top n textiles.	down app	•	particle siz			9
Nano fibre engineerin method; P Gap alignr	g; Electro roduction c nent metho	on, prope spinning o of non-con od; carbon	erties and of nano fi tinuous or nano fibre	bres: capill r short yarn es, metal a	ns such as ary method is: Rotating nd metal ox is zinc oxide	l, charge collector kide nano	injection method, particles	9
Applicatio Application hrough wa	ater and oi e, nanopel,	technolog I repellent nano care	y in textile , self clea , nano tou	ning, anti n	and polyme nicrobial, U' el, lotus effe	V protecti		9
Characteriz Transmissi ay and ra	on electror Iman spec	hods: Op microsco troscopy.	tical micro py, Atomic Testing of	c force micr	anning Ele oscopy, En ctional Text	ergy disp	ersion X-	9
NT, Nano Synthesis chemical v characteriz textiles: Ar coatings b	composite of carbon i apour depo ation, app ati-adhesive	s and Nar nano tube osition (C) lications; e nano co reatment,	to Coating s: principle /D); Polyn Nanotechr ating of fil self cleani) e methods, neric Nano nologies fo ores and te	arc dischar Composites r coating a xtiles, wate ydrophobic	s: definitio and struc r and oil surfaces,	n, types, turing of repellent layer by	9
Taxt Book	<u>.</u>					To	tal Hours:	45
1. Nano	tosh Sharma technology'	, NISCAIR,	First Editior	n, 2004.	na, "Advance nology in Tex			
2. Limit	ed, 2007.	ντις Ν., Να				(iies , wo		IISTIILIB
-			ology: Glob	al strategies,	industry trer	nds and ap	plications",	Wiley
	,		landbook o	f Nanotechno	ology", Spring	ger. 2007		
3 Brow		· -			nology in Tex	-	odhead Publ	ishing
4. Indu	stry insight I	ndian nano	technologv	", Cygnus Bus	siness Consul	ting and R	esearch, 200)6.
*SDG 9 – In	dustry Innov	ation and Ir	nfrastructure					

***SDG 7 – Affordable and Clean Energy



S.No.	Торіс	Total Hours
1.1	Introduction to Nanotechnology: Definition and Basic Concepts, Particle Size, and Nanoparticles	2
1.2	Top Down and Bottom Up Approaches for Nanotechnology	2
1.3	Synthesis of Nanomaterials Used in Textiles	2
2.1	Introduction to Nanofibers: Definition, Properties, and Applications (Filtration, Tissue Engineering)	2
2.2	Electrospinning of Nanofibers: Capillary Method and Charge Injection Method	2
2.3	Production of Non-Continuous or Short Yarns: Rotating Collector Method, Gap Alignment Method	2
2.4	Carbon Nanofibers, Metal and Metal Oxide Nanoparticles: Nano Silver, Nano Silica, Nano Titanium, Nano Zinc Oxide, etc.	1
3.1	Applications of Nanotechnology in Textile Materials and Polymers	2
3.2	Nano Finishing: Water and Oil Repellents, Self-Cleaning, Antimicrobial, UV Protective, Nano Architecture, and Lotus Effect	2
4.1	Characterization Methods: Optical Microscopy, Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM)	2
4.2	Atomic Force Microscopy (AFM), Energy Dispersion X-ray, and Raman Spectroscopy	2
4.3	Testing of Nano Functional Textiles: Antimicrobial, UV Protection, and Self- Cleaning Testing	2
5.1	Synthesis of Carbon Nanotubes: Arc Discharge, Laser Ablation, and Chemical Vapour Deposition (CVD)	2
5.2	Polymeric Nano Composites: Definition, Types, Characterization, and Applications	2
5.3	Nanotechnologies for Coating and Structuring of Textiles: Anti-Adhesive Nano Coating, Plasma Treatment, Sol-Gel Coating	2
Course	Designer(s)	

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60 PTT E31	Process Control and	Category	L	Т	Ρ	Credit
OU FITEST	Optimization in Yarn Spinning	PC	3	0	0	3

- The process control at different stages of spinning preparatory.
- To understand Ring spinning process to achieve yarn of required quality
- To analyze the influence on yarn quality, process changes for processing of manmade fibres
- To know the control of comber preparatory process; noil%, combing efficiency and neps removal efficiency of comber.

Pre-requisites

• Nil

Course Outcomes

On the	successful (completion of	the course, s	students will b	e able to		
CO1		•	cess variable	es and their co	ontrol in blow	room	Understand
	proces						
CO2	Optim	ize, assess a		Analyse			
CO3	Gain k	nowledge dra		Understand			
004	Unde	rstand the qu	ality assessm	nent and cont	rol in roving a	and ring	Understand
CO4	spinni	ng	-		-	-	
COF	Gain I	nowledge on	the limitation	n of spinning r	machinery an	d new	Understand
CO5		pts for higher					
Mappi	ng with Pro	gramme Out	comes				
COs				POs			
COS	1	2	3	4	5		6
CO1	3	2	3	2	2		2
CO2	3	2	3	3	2		2
CO3	2	2	3	3	2		2
CO4	3	2	3	2	2		2
CO5	3	2	3	3	2		2
3 - Str	rong; 2 - Mec	lium; 1 - Som	e				

Bloom's		ssessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	20	30	20
Understand	20	30	40
Apply	10	-	30
Analyse	10	-	10
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

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	60 PTT	E 31 - Dro		Textile Techi		arn Sninni	na		
60 PTTE 31 - Process Control and Optimization in Yarn Spinning Elective Hours/Week Total Credit Maximum Mar									
Elective		T	P	Hours	C	CA	Total		
	3	0	P Hours C CA ES T 0 45 3 40 60 60						
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Blowroom		<i></i>				,.			
	ind cleaning			nent and o		imization		9	
	ontrol of lint							5	
	; assessmer				ut quality, its	s influence	on yarn		
	ess changes	for proces	ssing manma	ade libres					
Carding P		aval ita	influence or		tral of lint in	waatay nang	romoval		
	n of trash rem leaning effic							9	
	and control							9	
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	and contro						5		
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efficiency of	comber - as					anu neps	removal		
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Roving an	d Yarn Produ	sessment uction Pro	and control;	; hooks remo	val				
Roving an Roving qual		sessment uction Pro	and control; cesses ntrol, its influ	; hooks remo uence on yar	val n quality; ring	g spinning-	control of	9	
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forming Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

6. No.	Topics	No. of hours
1.0	Vehicle Structure and Electronic Engine Systems	
1.1	Automobiles and its Types	1
1.2	Chassis: Function, Types and Construction	1
1.3	Frame: Function, Types and Construction	1
1.4	Car and Heavy Vehicle Bodies	1
1.5	Vehicle Aerodynamics	1
1.6	Electronically Injection System: Function, Layout and Working Principle (MPFi,GDI & CRDi)	2
1.7	Electronic Ignition System: Function, Layout and Working Principle (TCI & CDI)	1
1.8	Variable Valve Timing (VVT): Function, Construction and Working Principle	1
2.0	Electrical and Emission Control System	
2.1	Battery: Function, Types, Construction and Working Principle (Lead Acid and Lithium Ion)	2
2.2	Starting and Charging System: Function, Layout and Working Principle	2
2.3	Lighting System: Function and Layout	1
2.4	Vehicle Pollutants and its Effect	1
2.5	Emission Control System: Function, Construction and Working Principle (Catalytic Convertor & Exhaust Gas Recirculation)	1
2.6	Emission Norms in India – Bharat Stage VI	2
3.0	Transmission Systems	
3.1	Clutch: Function, Types, Construction and Working Principle (Manual)	1
3.2	Fluid Flywheel & Torque Converter	1
3.3	Manual Gear Box: Function, Types, Construction and Working Principle	1
3.4	Automatic Gear Box: Function, Types, Construction and Working Principle (AMT,CVT & AT)	2
3.5	Propeller Shaft, Slip Joints, Universal Joints: Function, Construction and Working Principle	1
3.6	Differential: Function, Types, Construction and Working Principle	1
3.7	Rear Axle Drive: Function, Types, Construction and Working Principle	1
3.8	Tyre: Function, Types and Construction	1
4.0	Steering, Brakes and Suspension Systems	•
4.1	Front Axle - Wheel Geometry - Wheel Alignment and Balancing	1
4.2	Steering Geometry - Steering Linkages. Gear Box: Function, Types, Construction and Working Principle	1
4.3	Power Steering: Function, Types, Construction and Working Principle (Electric & Hydraulic)	1
4.4	Suspension: Function, Types, Components and Working	1
4.5	Dependent Suspension System: Components and Working	1
4.6	Independent Suspension System: Types, Components and Working	1
4.7	Braking Systems: Disc & Drum Brakes – Function, Construction and Working Principle	1
4.8	Braking Systems Hydraulic and Pneumatic Braking Systems - Function, Construction and Working Principle	2
4.9	Antilock Braking System (ABS), Electronic Brake Force Distribution (EBD) and Traction Control (TC)	1
5.0	Electric and Autonomous Vehicles	
5.1	Electric Vehicles: Function, Types, Layout, Components, Working Principle and Challenges	1
5.2	Fuel Cell Vehicle: Function, Types, Layout, Components and Working Principle	and and

Passed in BoS Meeting held on 12/05/2023 Approved in Academics Council Meeting held on 03/06/2023 BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

5.3	Hybrid Vehicle: Function, Types, Layout, Components and Working Principle	1
5.4	Autonomous Vehicles: Levels of Autonomous Vehicles, Layout, Components, Working Principle and Challenges	2
5.5	Advanced Driver-Assistance Systems (ADAS): Function, Layout, Components and Working Principle	1
5.6	Connected Vehicle: Function, Types of Vehicle Connectivity, Components, Working Principle and Challenges	2
5.7	Electric Vehicles: Function, Types, Layout, Components, Working Principle and Challenges	1

Course Designer(s)

Dr Bharani Murugesa – bharanim@ksrct.ac.in
 Mr A.S.Subburayaasrran - subburaayasaran@ksrct.ac.in



Passed in BoS Meeting held on 12/05/2023 Approved in Academics Council Meeting held on 03/06/2023

60 PTT E32	Enzyme Technology for	Category	L	Т	Ρ	Credit
00 FTT E32	Textile Processing	PC	3	0	0	3

- To know enzymes, types and kinetics of enzyme reaction on textile fibres
- To understand application of enzymes on different fibres and
- To analyze the treatment of enzyme effluents.
- To know the specificity of enzyme action; extraction and purifications of enzymes.

Pre-requisites

• Nil

Course Outcomes

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

CO1	Under and	rsatnd the rati	ionale for sele	ecting enzyme	es for particul	ar process	Remember					
CO2	Expla	Explain the kinetics of single and multi substrate enzymes Understand										
CO3	Under	rstand enzym	es in pretre	eatment of co	otton substr	ates	Analyse					
CO4	Gain	knowledge or	n enzymatic r	nodification o	f man made f	ibers.	Apply					
CO5	Analy	ze Enzyme te	echnology for	effluent treat	ment.		Understand					
Марр	ing with Pro	gramme Out	comes									
COs				POs								
005	1	2	3	4	5		6					
CO1	3	2	3	2	2		2					
CO2	3	2	3	2	2		2					
CO3	3	2	3	2	2		2					
CO4	3	2	3	3	2		2					
CO5	3	2	3	3	3		2					
3 - St	rong: 2 - Mer	lium: 1 - Som	۵									

3 - Strong; 2 - Medium; 1 - Some

Assessment Patte	ern		
Bloom's		ssessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	10	20
Understand	30	10	40
Apply	-	20	20
Analyse	-	20	20
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Syllab	ous								
		K.S.F	angasamy		f Technolog		nous R202	2	
					Fextile Techi				
					echnology fo				
Elec	tive	ŀ	lours/Wee		Total	Credit		kimum Mar	
		<u> </u>	T	Р	Hours	C	CA	ES	Total
I		3	0	0	45	3	40	60	100
Enzymes Nomenclature and classification of enzymes; characteristic features of enzymes; modifiers of enzyme activity - activators and inhibitors; specificity of enzyme action; extraction and purifications of enzymes									9
Kinetio enzym	ne-catal	ngle-substra ysed reacti	ons.	-catalysed	reactions; Ba	asics of kinet	ics of multi-	substrate	9
Chem desizi	iistry ar ng, sco	uring, blead	e of cotton hing and bi		ymes in pret	treatment of	cotton sub	strates –	9
Enzyn	nes f	Other Fib or process yamide, po	ing and		zing protein i Ilose acetate		natic modif	ication of	9
Enzyr Enzyn	nes in ne te	Effluent Tr chnology	eatment	ogical re	mediation,		ecolourisati		9
							Tot	al Hours:	45
Text E	Book(s)	:							
1.			and Gubitz ambridge, l	,	"Textile proc	cessing with o	enzymes", \	Nood head	
2.	Freife	der D., "Mo	lecular Biol	ogy ", Jone	s and Bartlet	t Publishers I	Inc. 2000.		
Refer	ence(s)								
1.			d Cavaco-P ambridge, l		dvances in te	xtile biotechr	nology", Wo	odhead	
2.	Wei. C	Q., 'Surface	modificatio	n of Textile	s', Woodhead	d Publishing l	Ltd., 2009.		
3.	Micha	el A. Liebe		J. Lichten	berg, 'Princip			es and Ma	aterials
4.	Rosha	n Shishoo	'Plasma T	echnologie	s for Textile	s', Woodhea	d Publishin	g,2007.	
*SDG			ation and Ir					-	
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forming Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

	Contents and Lecture Schedule	1
S.No.	Торіс	Total
		Hours
1.1	Opening and Cleaning Efficiency in Blowroom: Assessment, Control,	3
	and Optimization of Trash Removal	
1.2	Causes and Control of Neps Generation; Role of Blowroom	2
	Accessories; Control of Lint in Waste	
1.3	Assessment and Control of Blowroom Output Quality and Its	2
	Influence on Yarn Quality; Processing Manmade Fibres	
2.1	Optimization of Trash Removal and Control of Lint in Waste in	3
	Carding Process	
2.2	Neps Removal Efficiency, Cleaning Efficiency; Hooks Formation and	3
	Levelling in Carding Process	
2.3	Assessment and Control of Card Sliver Quality and Its Influence on	3
	Yarn Quality; Processing Manmade Fibres	
3.1	Levelling in Draw Frame Process: Optimization, Blended Yarn	3
	Production, and Hooks Straightening	
3.2	Quality Assessment and Control of Draw Frame Sliver and Comber	3
	Lap; Hooks Removal in Combing Process	
3.3	Noil Percentage, Combing Efficiency, and Neps Removal Efficiency	3
	of Comber: Assessment and Control	
4.1	Roving Quality: Assessment, Control, and Its Influence on Yarn	3
	Quality	
4.2	Ring Spinning: Control of End Breakage Rate and Yarn Quality;	3
	Processing Changes for Manmade Fibres	
4.3	Classification and Control of Yarn Defects	3
5.1	Factors Affecting the Production Limits of Spinning Machinery and	3
	New Concepts for Higher Production	
5.2	Role of Humidity and Machinery Maintenance in Production and	2
	Quality	
5.3	Computation of Labour and Machine Productivity Indices	3
Course	Designer(s)	

1. Mr P Maheswaran -pmaheswaran@ksrct.ac.in

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT E33	Financial Management in	Category	L	Т	Ρ	Credit
00 FTT E33	Textile Industry	PC	3	0	0	3

- To understand the basic concepts of financial accounting and capital budgeting.
- To practice the fundamental concepts of costing and costing systems followed in apparel industry.
- To know about the costing of textile products
- To gain knowledge on different sources of finance, cost of capital and investment appraisal techniques and financial statements.

Pre-requisites

• Nil

Course Outcomes

On the	e successful	completion of	the course, s	students will b	e able to							
CO1		Understand the concepts of Financial Management and capital Undersoudgeting.										
CO2		stand importating cycle, det				ing capital,	Understand					
CO3	Gain I	knowledge on	the basic co	ncepts of cos	t accounting		Understand					
CO4	Under	stand basic c	oncepts of di	fferent costin	g systems.		Understand					
CO5	Calcu	late the CMT	costing techr	nique for garm	nent productio	on	Apply					
Mappi	ing with Pro	gramme Out	comes									
COs				POs								
COS	1	2	3	4	5		6					
CO1	2	2	3	2	3		2					
CO2	2	2	3	2	3		2					
CO3	2	2	3	2	3		2					
CO4	2	2 2 3 2 3										
CO5	3	3	3	3	3		2					
3 - Str	rong: 2 - Mec	lium; 1 - Som	е									

Bloom's Category		sessment Tests arks)	End Sem Examination (Marks)
Calegory	1	2	
Remember	30	30	34
Understand	30	30	26
Apply	-	-	40
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

Syllabus	KSR	angasamy	College o	f Technolog	v – Autonor	nous R202	2	
	N.O.N	ungusuny		Fextile Tech			-	
	60	PTTE 33		Managemer		ndustry		
Floative		ours/Wee		Total	Credit		kimum Mar	ks
Elective	L	Т	Р	Hours	С	CA	ES	Total
	3	0	0	45	3	40	60	100
Objectives, maximizatio Techniques	n - Functions of investm	functions s of financ ent analy	of financia ial manage sis – pay	I manageme er Capital Bu /back period IRR and NPV	ldgeting: Nat d method,	ure and pr	inciples -	9
Definition – Factors influ ABC analysi	encing worki s.	rking capit	al – Gross	and Net wo control techr				9
examples fi problems.	nting, compa om apparel			and financia of costing, c				9
manufacturii	osting; contra	ict costing;	process co	osting: joint a	and by produ	ct costing i	n apparel	9
yarn, cost o	of fabric pro	duction, c	ost of fabr	he price of g ic processin t, simple prob	g and desig			9
oomponomo	, outing ooot	, maning a				Tot	al Hours:	45
Text Book(s):							
	K. Bhattach	aryya., Prir	ncipals and	practice of co	ost Accountir	ng, PHI. Thi	rd Edition,	
2. 2005		st Accountii	ng – Princip	oles and prac	tice. Sultan c	hand & Sor	ns, New Del	hi,
Reference(s					<u> </u>			
1. Pand 2000		ancial Man	agement", `	Vikas Publisł	ning House P	vt. Ltd., Ne	w Delhi, 8 th	Edition
	anna Chandra bany Ltd, 5th			nent, Theory 001.	and Practice	, Tata McG	raw-Hill Put	olishing
	and Jain, "B on, 2001.	asic financ	ial Manage	ment & Pract	ice", Tata Mo	Graw Hill, I	New Delhi, :	5 th ,
4. Aswa 2000		n, "Corpor	ate finance	e theory and	practice",	John Wiley	and Sons,	Asia.,
**SDG 3 – G	dustry Innova Good Health a		eing	9				

***SDG 7 – Affordable and Clean Energy

Jonnia BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

S.No.	Topic	Total
		Hours
1.1	Introduction to Financial Management: Objectives, Scope, and Functions	2
1.2	Profit Maximization vs. Wealth Maximization; Functions of a Financial	2
	Manager	
1.3	Capital Budgeting: Nature and Principles	2
1.4	Techniques of Investment Analysis: Payback Period Method and Accounting	2
	Rate of Return (ARR)	
1.5	Discounted Cash Flow Methods: Internal Rate of Return (IRR) and Net	1
	Present Value (NPV)	
2.1	Working Capital: Definition, Types (Gross and Net), and Operating Cycle	2
2.2	Factors Influencing Working Capital	2
2.3	Inventory Control Techniques: Economic Order Quantity (EOQ) and ABC	2
	Analysis	
3.1	Introduction to Cost Accounting: Comparison Between Cost Accounting and	2
	Financial Accounting	
3.2	Elements of Cost in the Apparel Industry	2
3.3	Methods of Costing: Introduction to Cost Sheet Preparation	2
3.4	Cost Sheet Preparation: Simple Problems	2
4.1	Costing Systems: Job Order Costing and Contract Costing	2
4.2	Process Costing: Joint and By-Product Costing in Apparel Manufacturing	2
5.1	CMT Costing of Garments: Introduction and Factors Determining Garment	2
	Price	
5.2	Material Cost, Yarn Cost, and Fabric Production Cost	2
5.3	Fabric Processing Cost, Design Cost, Lot Size, and Cost of Components	2
5.4	Cutting Cost, Making Cost, and Trim Cost	2
5.5	Simple Problems on CMT Costing	2
Course	Designer(s)	

1. Mr A.S.Subburayaasrran - subburaayasaran@ksrct.ac.in

Formin BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT E41	Design Concepts in High	Category	L	Т	Ρ	Credit
00 F11 E41	Speed Fabric Formation	PC	3	0	0	3

- To enable the students to study about developments in
- To analyze the Preparatory processes, 3D fabric formation and machineries of technical fabric production.
- To know the developments in the design of winding, warping and sizing machines for improving quality of preparation.

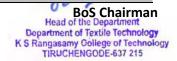
Pre-requisites

• Nil

Course Outcomes

On the successful completion of the course, students will be able to Gain knowledge on the preparatory processes and developments on CO1 Understand technical fabricproduction. Understand the weft Insertion in shuttleless looms - rapier, projectile CO2 Understand movement, jet profile in air jet loom. Understand the developments in 3D fabric formation and principle CO3 Understand involved. CO4 Analyse the developments in narrow width fabric mmanufacturing Analyse Understand the developments in weft knitting and warp knitting CO5 Understand machines for producing technical fabrics. Mapping with Programme Outcomes POs COs 1 2 3 4 5 6 CO1 3 2 2 3 3 2 CO2 2 2 2 3 3 2 CO3 3 2 2 3 3 2 CO4 3 2 3 2 2 2 2 2 3 2 CO5 3 2 3 - Strong; 2 - Medium; 1 - Some

Bloom's		ssessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	30	34
Understand	30	10	26
Apply	-	10	10
Analyse	-	10	30
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100



		K.S.R	angasam		f Technolog		nous R202	2		
					Fextile Tech					
				-	epts in High	-				
Elec	tive	F	lours/Wee		Total			ximum Mar	ks	
		L	Т	Р	Hours	С	CA	ES	Total	
۱۱	/	3	0	0	45	3	40	60	100	
Winding and Warping										
	Developments in the design of winding, warping and sizing machines for improving quality of									
prepai	ration a	nd producti	vity of prep	paratory pro	cesses.					
Weft	Inserti	on Technic	ues							
					eless looms				9	
					esign of pick	insertion sy	stems, she	d forming	Ũ	
mecha	anisms,	developme	nts in othe	r auxiliary m	echanisms					
-		mation							_	
Develo	opment	s in 3D fa	bric forma	tion, differe	nt principles	involved in	3D fabric	formation	9	
		th fabric							9	
				· · ·	ind braids ma	inufacturing				
	_	•	-	echniques	, maabinaa fa	w to obvio ol fo	hrico		9	
Develo	opment	s in weit kn	itting and v	warp knitting	g machines fo	or technical la		al Hours:	45	
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BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

S.No.	Торіс	Total Hours
1.1	Developments in Winding Machines for Improving Quality and Productivity	3
1.2	Developments in Warping and Sizing Machines for Improving Quality and Productivity	3
1.3	Quality Control in Preparatory Processes: Winding, Warping, and Sizing	3
2.1	Theoretical Analysis of Weft Insertion in Shuttleless Looms: Rapier and Projectile Movement	3
2.2	Jet Profile in Air Jet Looms and Developments in Pick Insertion Systems	3
2.3	Shed Forming Mechanisms and Developments in Auxiliary Mechanisms	3
3.1	Developments in 3D Fabric Formation	3
3.2	Principles Involved in 3D Fabric Formation	3
4.1	Developments in Narrow Width Fabric Manufacturing	3
4.2	Carpet and Braid Manufacturing Techniques	3
5.1	Developments in Weft Knitting Machines for Technical Fabrics	3
5.2	Developments in Warp Knitting Machines for Technical Fabrics	3
5.3	Quality Control in Technical Fabric Production using Knitting Techniques	3
Course	Designer(s)	

Course Designer(s) 1. Dr N Sukumar - <u>sukumar@ksrct.ac.in</u>

2. Mr M Arunkumar - sukumar@ksrct.ac.in

formin BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT E42	Management of Textile	Category	L	Т	Р	Credit
00 F11 E42	Effluents	PC	3	0	0	3

- To know Pollutants from textile chemical processing industry, treatment and Government regulations.
- To know the functions and activities of Ministry of environment; Central and State pollution control boards
- To analyse the Waste water characteristics; wastewater treatment objectives, methods and implementationconsiderations.

Pre-requisites

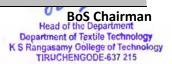
• Nil

Course Outcomes

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

CO1		knowledge or	ile chemical	Understand					
		ssing industry		-					
CO2	Gain	knowledge or		Analyse					
CO3		Managing pollutants as per Government regulations and Methods of green processing.							
CO4		Understand the technical regulation in safety and health of textile materials							
CO5		Understand the need for solid and hazardous waste management in textile industry Understand							
Mapping with Programme Outcomes									
COs				POs					
COS	1	2	3	4	5		6		
CO1	2	1	2	3	3		2		
CO2	2	2	2	3	3	2			
CO3	2	2	3	3	3	2			
CO4	2	2	3	2	2	2			
CO5	2	1	3	2	3		2		
3 - St	rong; 2 - Me	dium; 1 - Som	e						

Bloom's		sessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	10	10	20
Understand	10	10	20
Apply	10	10	20
Analyse	30	30	40
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100



	Total 100 9
Elective Hours/Week Total Hours Credit Maximum Marks IV 3 0 0 45 3 40 60 Industrial policies and Environmental guidelines for industries Industrial policy of India; pollution monitoring and control; functions and activities of Ministry of environment; Central and State pollution control boards; environmental clearance and guidelines for industries; environment impact assessment; fiscal incentives for environmental protection; environmental auditing. Waste water management Waste water characteristics; wastewater treatment - objectives, methods and implementation considerations; recycling of effluents. Pollution control in Textile industries ldentification and reduction of pollution sources in textile wet processing; pollution control in man - made fibre industry; analysis of textile processing effluents – colour, odour, pH, total solids, suspended solids, total dissolved solids, BOD, COD, total alkalinity, chloride, sulphates, calcium and chromium; tolerance limits for effluents; bio - degradability of textile chemicals and auxiliaries. Safety and health aspects of textile materials natural dyes and environmental considerations. — banned dyes and chemicals; eco labeling, eco friendly textile processes - machines and specialty chemicals; natural dyes and environmental considerations. Waste Management In Textile Industry Need for solid and hazardous wastes, storage, collection and transport of wastes, waste processing technologies, waste disposal. Text Book(s):	Total 100
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 Chritie R., "Environmental aspects of textile dyeing", Woodhead Publishing Ltd, 2007. Cooper P., "Colour in Dyehouse Effluent", Woodhead Publishing Ltd, 2005. 	45
2. Cooper P., "Colour in Dyehouse Effluent", Woodhead Publishing Ltd, 2005.	
Reference(s):	
1. Eco-Textiles: Regulations, Labels, Processing and Testing, A Special Report", The Bombay Textile Research Association, Mumbai, 2006.	
 George Thobanoglous and Franklin L. Burton., "Waste Water Engineering a Treatment, Disposal, Reuse (Metcalf & Eddy Inc., California)", Tata McGraw-Hill Publishi co Ltd, New Delhi, 1995. 	and ing
3. Manivasakam N., "Treatment of Textile Processing Effluents (including analysis)", Sa Publications, Coimbatore, 1995.	-
4. Skelly J. K., "Water Recycling in Textile wet Processing", Woodhead Publishing Ltd,	-
*SDG 9 – Industry Innovation and Infrastructure	khi

forming BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

S.No.	Topic	Total
		Hours
1.1	Industrial Policy of India and Pollution Monitoring and Control	3
1.2	Functions and Activities of Ministry of Environment and Pollution Control	3
	Boards	
1.3	Environmental Clearance, Guidelines for Industries, and Environmental	3
	Impact Assessment	
1.4	Fiscal Incentives for Environmental Protection and Environmental Auditing	2
2.1	Wastewater Characteristics and Treatment: Objectives and Methods	3
2.2	Implementation Considerations in Wastewater Treatment	2
2.3	Recycling of Effluents	2
3.1	Identification and Reduction of Pollution Sources in Textile Wet Processing	3
3.2	Pollution Control in Man-Made Fibre Industry	2
3.3	Analysis of Textile Processing Effluents: Colour, Odour, pH, Total Solids,	3
	Suspended Solids, and Total Dissolved Solids	
3.4	BOD, COD, Total Alkalinity, Chloride, Sulphates, Calcium, Chromium:	3
	Tolerance Limits and Biodegradability of Chemicals	
4.1	Technical Regulations on Safety and Health Aspects of Textile Materials:	3
	Banned Dyes and Chemicals	
4.2	Eco-Labelling, Eco-Friendly Textile Processes, Machines, and Specialty	3
	Chemicals	
4.3	Natural Dyes and Environmental Considerations	3
5.1	Need for Solid and Hazardous Waste Management in Textile Industry	3
5.2	Types and Sources of Solid and Hazardous Wastes in Textile Industry	3
5.3	Storage, Collection, Transport, and Processing Technologies for Waste	3
5.4	Waste Disposal in the Textile Industry	3
Course	Designer(s)	

Course Designer(s)

1. Mr P Maheswaran -pmaheswaran@ksrct.ac.in

Formin BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT E43	Textile Reinforced Composites	Category	L	Т	Р	Credit
00 FTT E43	Textile Reinforced Composites	PC	3	0	0	3

- To understand reinforcements, matrices used for the composites
- To know the manufacture and testing of composites and
- To analyze the Mechanics of failure of composites
- To understand the fibre volume and weight fraction, specific gravity of composites..

Pre-requisites

• Nil

Course Outcomes

On the	e successful	completion of	the course, s	students will b	be able to					
CO1	Unde	rstand the diff	erent types o	f textile reinfo	orcements		Understand			
CO2		Select matrices for the manufacture of composites for getting differe characteristics								
CO3		Know the composites manufacturing for both thermoplastics and thermosets - Hand layup, filament winding								
CO4	Evalu	Evaluate the testing of composites								
CO5	Unde	Understand the micro mechanics and macro mechanics of laminates.								
Mapping with Programme Outcomes										
COs				POs						
CUS	1	2	3	4	5		6			
CO1	2	1	3	3	2		2			
CO2	3	2	3	3	2	2				
CO3	2	2 3 3 2 2								
CO4	3	3	3	2	2		2			
CO5	3	2	3	3	2		2			
3 - St	rona: 2 - Mea	dium; 1 - Som	е							

Bloom's		ssessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	10	10	20
Understand	10	10	20
Apply	40	20	30
Analyse	-	20	30
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

formin BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Syllab	us								
		K.S.R	angasamy			<u>y – Autonor</u>	nous R202	2	
			EO DTT		Textile Tech	nology ed Composi	<u>+00</u>		
		F	lours/Wee		Total	Credit	1	kimum Mar	ks
Elect	tive	ı	T	P	Hours	C	Total		
IV	'	3	0	0	45	3	CA 40	ES 60	100
	acturing			cations of (Glass, Quartz	z, Boron, Sili	con carbide	, Carbon,	9
Unsatu	ation, (irated	Polyester,	Vinyl Es		y, Phenolics	rmoplastic a s, polyimide		et resins- rethanes,	9
Compo Filame vaccun	osites nt Win n impre	egnation n	ring for I n transfer I	moulding, p ompression	prepregs and	and thermo autoclave post proces	moulding, p	oultrusion,	9
	olume ession, sites.					posites, tenses of thermos			9
Micro r	mechai					mechanics			9
							Tot	al Hours:	45
Text B	ook(s)	:							
1.	Bor Z.	Jang, "Adva	anced Poly	mer compo	sites", ASM I	nternational,	USA, 2002.		
					mental Char New Jersey	acterization 2004.	of advance	d composit	e
	nce(s)								
1	Georg 2001.	e Lubin a	nd Star	nley T.Peter	s, "Handboo	k of Compos	ites", Spring	ger Publicati	ons,
2.	Mel. N	l. Schwartz	, "Composi	te Material	<u>s", Vol</u> . 1 & 2	2, Prentice -	Hall PTR,	NewJerse	<u>y,20</u> 07
						aterials", Dov			
Δ	Sanjay	/ K Ma	zumdar,	Compo Press, 2001	osites Mai	nufacturing:			
				frastructure					

(and a color BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

S.No.	Торіс	Total Hours
1.1	Manufacturing and Properties of Glass, Quartz, Boron Fibers	2
1.2	Manufacturing and Properties of Silicon Carbide, Carbon, HPPE, and Aramid Fibers	2
1.3	Applications of Glass, Quartz, Boron, Silicon Carbide, Carbon, HPPE, and Aramid Fibers	2
1.4	Comparative Analysis of Reinforcement Fibers for Composite Applications	1
2.1	Preparation, Chemistry, and Properties of Thermoset Resins: Unsaturated Polyester, Vinyl Ester, Epoxy, and Phenolics	3
2.2	Properties and Applications of Thermoset Resins in Composites	2
2.3	Preparation, Chemistry, and Properties of Thermoplastic Resins: Polyimides, Polyurethanes, Polyamides, Polypropylene, PEEK	2
2.4	Properties and Applications of Thermoplastics in Composites	2
3.1	Composite Manufacturing Techniques: Hand Layup, Filament Winding, and Resin Transfer Moulding	3
3.2	Prepregs, Autoclave Moulding, and Pultrusion Methods	2
3.3	Vacuum Impregnation Methods, Compression Moulding, and Post-Processing of Composites	2
3.4	Composite Design Requirements	2
4.1	Testing of Fibre Volume and Weight Fraction, Specific Gravity of Composites	2
4.2	Tensile, Flexural, Impact, and Compression Testing of Thermoset and Thermoplastic Composites	2
4.3	Interlaminar Shear Stress, Fatigue Testing	2
5.1	Micro-Mechanics of Single Layers	2
5.2	Macro-Mechanics of Single Layers and Laminates	2
5.3	Classical Lamination Theory and Failure Theories	2
5.4	Prediction of Interlaminar Stresses Using Software	2
ourse	Designer(s)	

1. Dr Saravanan.K - saravanan.k@ksrct.ac.in

(D) main (CO) BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT E51	Control systems and Automation	Category	L	Т	Ρ	Credit
	in Textile Engineering	PC	3	0	0	3

- To gain knowledge on automation and control systems in spinning. ,
- To gain knowledge on automation and control systems in weaving.
- To gain knowledge on automation and control systems in processing.

Pre-requisites

• Nil

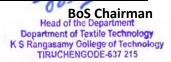
Course Outcomes

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

CO1	Gain kno	wledge on the	e applications	s of instrumer	tation for cor	ntrol systems	Understand		
CO2		Understand the concept of electrical, electronics and mechanical Und automation							
CO3	Gain kno	wledge on au	tomations in	Spinning mad	chineries		Apply		
CO4	Understa	nd the contro	I system and	automations	in weaving m	achines	Understand		
CO5	Demonst	rate the comp	outerized proc	cessing in tex	tile manufact	uring	Apply		
Маррі	ing with Pro	ng with Programme Outcomes							
COs				POs					
003	1	2	3	4	5		6		
CO1	3	2	3	3	2		2		
CO2	2	2	3	3	2		2		
CO3	2	2	3	3	2		2		
CO4	2	2 2 3 3 2 2				2			
CO5	3	3 2 3 3 2 2							
3 - Str	rong; 2 - Mec	lium; 1 - Som	е						

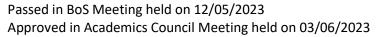
Bloom's		ssessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	10	20
Understand	30	20	40
Apply	-	30	40
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100





	K.S.F	Rangasamy		f Technolog Fextile Techi		nous R202	2	
	60 PTTE	51 - Contro				tile Engine	erina	
60 PTTE 51 – Control systems and Automation in Textile Engineering Elective Hours/Week Total Credit Maximum Mark								ks
Electi	ve i	T	Р	Hours	C	CA	ES	Total
V	3	0	0	45	3	40	60	100
ntrodu	ction About Co	-	-					
Instrum applicat Transdu measur example flapper sequent	entation and T ions of Instrume ucers - Torque ements. Control es - Stepper mot valves - Hydra tial logic circuit amming methods	ransducers: entation - ge Measureme System Co tors - Hydra ulic and Pn t design -	Function eneralized nt Elastic omponents ulic valves eumatic a Programr	configuration transducers : Basics of c - Pneumatic utomation nable Logic	- Tribo elec - sound lev control syste switches, pr in textile Controllers (ctric pick-up /el meter - m – Contro oximity swi machines (PLC), Bloc	o, Infrared vibration ol system tches and - simple	9
ndustri ndustria motions assemb ester, measur	ial automation al Automation: Ir by electrical a ly and transfer li classification of ing instruments,	ntroduction, i nd mechani nes. Electro faults, digit HVI, AFIS, L	ntegration ical device nic Textile al fibrogra Jniversal te	, material har es- Mechanic Instruments: ph, hairiness ensile testers	ndling system al design fo Electronic p s meter, Vib	n, simple sy or automati rinciples in	c feeding evenness	9
Control variatior and qua	System & Auto System and Auto n controls – Fee ality monitors – g preparatory, r	utomation in ders and Sto Full doff ar	Spinning op motions id pre-set	Machinery: – Auto level length monit	ers – safety ors. Data a	switches. F cquisition s	Production system for	9
Control splicer controls	System & Auto System and A carriage controls - sizing mach e monitors ntrols. Data acqu	utomation in s - pre-set le ine monitors	n Weaving ength/full c s and con	g Machinery: one monitors trols - auto-	s. Warping m reaching/dra	nachine mo wing-in and	nitors and d knotting	9
Comput Apparel	terised Process erised Process production. Ele in E-com, Appli	ing: CAD/C	AM/CIM in Interchan	ige and E-co	m, internet	commerce, extile indus	Business tries.	9
						To	tal Hours:	45
	оок(s): Berkstresser G л Fibres to Appare				Automation	in the Text	tile Industry	from
2. (George stylios, " ⁻ E.Horwood, 1991	Textile objec			automation ir	n garment n	nanufacture	,
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т. Е	Nalura B C, "The Pub, 1998.					-		•
2. (Ormerod A, "Moo Gordon A. Berk ndustries", Noye	stresser III	et.al, "Au	tomation and				
	Fextiles Go On-li							
	/assiliadis S G, '				". Eurotex. 1	996.		
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Course Contents and Lecture Schedule



00 BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

S.No.	Торіс	Total Hours
1.1	Introduction to Control System and Instrumentation: Functional Description of Instruments	2
1.2	Types and Applications of Instrumentation: Tribo Electric Pick-up, Infrared Transducers, Torque Measurement	2
1.3	Elastic Transducers, Sound Level Meter, Vibration Measurements	2
1.4	Control System Components: Stepper Motors, Hydraulic Valves, Pneumatic Switches, Proximity Switches, Flapper Valves	2
1.5	Hydraulic and Pneumatic Automation in Textile Machines: Simple Sequential Logic Circuit Design	2
1.6	Programmable Logic Controllers (PLC): Block Diagram, Programming Methods, and Applications in Textile Machinery	2
2.1	Introduction to Industrial Automation: Integration, Material Handling Systems	2
2.2	Simple Systems for Motion by Electrical and Mechanical Devices: Mechanical Design for Automatic Feeding and Transfer Lines	2
2.3	Electronic Textile Instruments: Evenness Tester, Fault Classification, Digital Fibrograph, Hairiness Meter, Vibroscope	2
2.4	Thickness Measuring Instruments, HVI, AFIS, Universal Tensile Testers	2
3.1	Control System and Automation in Spinning Machinery: Material Flow, Feeders, Stop Motions, Auto Levelers, Safety Switches	3
3.2	Production and Quality Monitors: Full Doff and Pre-Set Length Monitors	2
3.3	Data Acquisition Systems in Spinning Preparatory, Ring Spinning, and Rotor Spinning	2
3.4	On-line Monitoring System in Spinning Industry: Case Studies	2
4.1	Control System and Automation in Weaving Machinery: Yarn Clearer Controls, Knotter/Splicer Carriage Controls	2
4.2	Warping and Sizing Machine Monitors and Controls: Auto-Reaching, Drawing-in, Knotting Machine Monitors and Controls	2
4.3	Data Acquisition Systems in Weaving Preparatory and Weaving: Humidification Systems	2
5.1	Computerized Processing: CAD/CAM/CIM in Spinning, Weaving, Dyeing, Printing, and Apparel Production	3
5.2	Electronic Data Interchange (EDI) and E-Commerce: Internet Commerce, Business Strategy, and Applications in Textiles	3
5.3	Robotics in Textile Industries: Applications and Case Studies	2
	Designer(s)	
1.	Dr Saravanan.K - saravanan.k@ksrct.ac.in	

Formin BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT E52	Design and Analysis of Textile	Category	L	Т	Ρ	Credit
00 FTT E32	Experiments	PC	3	0	0	3

- To know the fundamentals of experimental design
- To select the suitable design
- To analyse the results.

Pre-requisites

• Nil

Course Outcomes

On the	On the successful completion of the course, students will be able to									
CO1	Understa	Understand the fundamentals of experimental design								
CO2	Gain Kno	Gain Knowledge on the single factor textile experiments								
CO3	Gain kno	wledge on m	ultifactor texti	le experimen	ts		Apply			
CO4	Analyse	the special ex	perimental d	esigns for tex	tile applicatio	ns	Analyse			
CO5	Evaluate	by Taguchi n	nethods techr	niques for tex	tile engineerii	ng	Analyse			
Mappi	oping with Programme Outcomes									
COs				POs						
003	1	2	3	4	5		6			
CO1	3	2	3	2	2		2			
CO2	2	2	3	3	2		2			
CO3	2	2	3	3	2		2			
CO4	3	2	3	2						
CO5	3	3 2 3 3 3 2								
3 - Str	3 - Strong; 2 - Medium; 1 - Some									

Assessment Patte	rn		
Bloom's		sessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	10	10	20
Understand	20	10	20
Apply	30	20	20
Analyse	-	20	40
Evaluate	-		-
Create	-		-
Total	60	60	100

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Syllab	ous								
		K.S.I	Rangasamy		of Technolog		nous R202	2	
	M. Tech Textile Technology								
	60 PTTE 52 – Design and Analysis of Textile Experiments								-
Elec	tive		Hours/Week Total Credit Maximum Mark						
		L	T	Р	Hours	С	CA	ES	Total
	v	3	0	0	45	3	40	60	100
Import ANOV model	tance o /A, step I.	f experime os in expe	rimentation	nental strat	egies, basic ize, normal p				9
Comp analys tests,	letely ra sis, esti in respe	mation of i	l design, Ra model parar e process, r	meters, mo	block design del adequacy d quality para	/ checking, p			9
Two a Blocki	and thre	gns; applic	ull factorial o ation in text		s, 2K factoria ents.	al Experimen	ts, Confour	nding and	9
Fraction Surface	onal fa ce Meth	iodology, E	sign, nested	with rando	Split plot de om factors, ru				9
Steps contro		erimentatio			ogonal Arrays neter design,				9
							Tot	al Hours:	45
Text E	Book(s)):							
1.			actical Statis ester, 1984,		Textile Indus 739517.	try, Part I and	l II", The Te	extile	
2.	Montg	omery, D.0	C., Design a	nd Analysis	s of experime	nts, John Wil	ey and Sor	ns, 2003.	
Refer	ence(s)	:							
1.	1. Nicolo Belavendram, Quality by Design; Taguchi techniques for industrial experimentation, Prentice Hall, 1995.								
2.	2. Phillip J.Rose, Taguchi techniques for quality engineering, McGraw Hill, 1996.								
*SDG	9 – Ind	ustry Innov	ation and Ir	nfrastructur	e				

(and all a Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

S.No.	Торіс	Total Hours
1.1	Importance of Experiments, Experimental Strategies, and Basic Principles of Design	2
1.2	Terminology in Experimental Design, ANOVA, and Steps in Experimentation	2
1.3	Sample Size Determination, Normal Probability Plot, and Linear Regression Model	2
1.4	Analysis of Variance (ANOVA) and Model Adequacy Checking	1
2.1	Completely Randomized Design (CRD): Concepts and Statistical Analysis	2
2.2	Randomized Block Design (RBD): Concepts, Statistical Analysis, and Model Parameters	2
2.3	Latin Square Design (LSD): Concepts, Statistical Analysis, and Model Adequacy Checking	2
2.4	Pairwise Comparison Tests in Textile Process, Machine, and Quality Parameter Applications	2
3.1	Two and Three Factor Full Factorial Experiments: Concepts, Statistical Analysis, and Applications	2
3.2	2K Factorial Experiments: Concepts, Confounding, and Blocking Designs	3
3.3	Applications of Full Factorial and 2K Factorial Experiments in Textile Experiments	2
4.1	Fractional Factorial Design: Concepts and Applications	2
4.2	Nested Designs and Split Plot Designs: Concepts and Applications	2
4.3	Introduction to Response Surface Methodology (RSM): Concepts and Applications	2
4.4	Experiments with Random Factors, Expected Mean Squares, and Approximate F-Tests	2
5.1	Taguchi Methods: Introduction, Steps in Experimentation, and Design Using Orthogonal Arrays	3
5.2	Data Analysis, Robust Design, Control and Noise Factors, S/N Ratios, and Parameter Design	3
5.3	Case Studies in Textile Engineering Using Taguchi Methods	3
Course	Designer(s)	

1. Dr Bharani Murugesan – bharanim@ksrct.ac.in

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT E53	Advances in Textile Printing	Category	L	Т	Ρ	Credit
00 FTT E55	Advances in Textile Printing	PC	3	0	0	3

- To gain knowledge on digital printing, digital image
- To impart knowledge on colour management
- To know about quality evaluation and special printing techniques.

Pre-requisites

• Nil

Course Outcomes

On the	On the successful completion of the course, students will be able to								
CO1	Understa	Understand the concept of ink jet printing							
CO2	Gain kno	Gain knowledge on digital image design							
CO3	Know the	e factors invol	ved in pre tre	atment of sub	ostrates	Apply			
CO4	Analyse	the quality of	textile substra	ates		Analyse			
CO5	Understa	ind the proces	ss involved in	special printi	ing technique	es Understand			
Mappi	pping with Programme Outcomes								
COs				POs					
COS	1	2	3	4	5	6			
CO1	3	2	3	3	2	2			
CO2	2	2	3	3	2	2			
CO3	2	2	3	3	2	2			
CO4	3	2	3	3	3	2			
CO5	3	3 2 3 3 2 2							
3 - Str	3 - Strong; 2 - Medium; 1 - Some								

Bloom's Category		sessment Tests arks)	End Sem Examination (Marks)
Calegory	1	2	
Remember	10	10	20
Understand	20	10	20
Apply	30	20	20
Analyse	-	20	40
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

formin BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Syllabu	JS							
	K.S.R	angasamy			y – Autonon	nous R202	2	
				Textile Tech				
60 PTTE 53 – Advances in Textile Printing Hours/Week Total Credit Maximum Mar								
Elect	ive H	iours/wee	K P	l otal Hours	Credit	CA	ES	
V	3	0	0 P	45	C 3	40	60	Total 100
Ink jet p	Printing printing-evolution ical foundations for	of digital pr	inting, Corr	parison with	conventional	I printing te	chniques,	9
Digital Digital printers	Image Design image design, ed s, Digital colour inication.	iting and da	ata storage	systems, Pi	xel and imag	e formation	in digital	9
Pretrea interact substra	atment of Substrat itment of substrat ition, surface ene ites; washing of in	es for inkje rgy of inks	s, dye ink	formulation;	fixation prod			9
Quality	r Evaluation evaluation of te , advantages and							9
Specia Special Develo	I Printing Techni I printing techniq pments in Xerox p s, velvets and kr	ques ues- Deve printing and	lopments i I Laser prin	n Photo prii iting for fancy	nting, Blast / effects; Yar	printing wit n printing; p	h Indigo, printing of	9
						Tot	al Hours:	45
Text B								
1	Miles L W C. "Textile Printing". Society of Dyers and Colourists. Hobbs The							
2.	Shenai V A, "Tecł	nnology of l	Printing", So	evak Publish	ers, Mumbai,	1990.		
Refere	nce(s):							
1.	Shore J, "Coloran	ts & Auxilia	ries", Vol. I	& II, Society	of Dyers and	Colourists	, UK, 1990.	
	Tyler D, "Textile D No.4, 2005)igital Printi	ng Technol	logies", Texti	e Institute Pu	Iblication U	K, Vol.37	
3.	Ujiie, "Digital Print	ting of Text	iles", CRC,	Wood Head	Publishing Lt	td, UK, 200	6.	
*000 0) - Industry Innov	ation and Ir	frontructur	<u>^</u>				

*SDG 9 – Industry Innovation and Infrastructure **SDG 3 – Good Health and Well Being ***SDG 7 – Affordable and Clean Energy

formin BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

S.No.	Торіс	Total
		Hours
1.1	Introduction to Inkjet Printing: Evolution of Digital Printing and Comparison with Conventional Printing Techniques	2
1.2	Theoretical Foundations for Inkjet Technologies: Continuous and Drop-on- Demand Technologies	3
2.1	Digital Image Design: Concepts, Editing, and Data Storage Systems	2
2.2	Pixel and Image Formation in Digital Printers	2
2.3	Digital Colour Management: Colour Gamut, Rendering Intent, and Colour Communication	3
3.1	Pretreatment of Substrates for Inkjet Printing: Importance and Techniques	2
3.2	Inkjet Heads and Inks Used for Printing: Dye-Fibre Interaction, Surface Energy, and Ink Formulation	3
3.3	Fixation Procedures for Inks on Substrates: Heat and Sublimation Printing	2
4.1	Quality Evaluation of Textile Substrates Used for Inkjet Printing	2
4.2	Quality Evaluation of Inks Used for Inkjet Printing	2
4.3	Advantages, Limitations, and Techno-Economics of Inkjet Printing	2
5.1	Special Printing Techniques: Developments in Photo Printing and Blast Printing with Indigo	2
5.2	Developments in Xerox and Laser Printing for Fancy Effects	2
5.3	Yarn Printing, Printing of Carpets, Velvets, and Knits	3
5.4	Eco-Friendly Alternatives for Auxiliaries Used in Conventional Printing	3
Course	Designer(s)	

1. P Maheswaran – pmaheswaran@ksrct.ac.in

BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

60 PTT E61	Filtration Textiles	Category	L	Т	Ρ	Credit
60 PTT E61	Fillation Textiles	PC	3	0	0	3

• To enable the students to learn about the principles of filtration and textile materials used for filtration process.

Pre-requisites

• Nil

Course Outcomes

On the	successful	completion of	the course, s	students will b	be able to						
CO1	Principle	s of filtration	Understand								
CO2	Fabric co	Instruction an	d finishing tre	eatments of fil	Itration textile	s Apply					
CO3	Concepts	s of liquid and	l oil filtration			Apply					
CO4	Concepts	s of solid liqui	d separation			Analyse					
CO5	Types of	Gas filters				Understand					
Mappi	ng with Pro	gramme Out	comes								
COs				POs							
COS	1	2	3	4	5	6					
CO1	3	2	3	3	2	2					
CO2	3	2	3	3	2	2					
CO3	3	2	3	3	2	2					
CO4	3	2									
CO5	3	3 2 3 3 2 2									
3 - Strong; 2 - Medium; 1 - Some											

Bloom's Category		sessment Tests arks)	End Sem Examination (Marks)
Calegory	1	2	
Remember	10	10	20
Understand	20	10	20
Apply	30	20	20
Analyse	-	20	40
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Bos Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

 Control System & Automation In Weaving Industry Control System and Automation in Weaving Machinery: Yarn clearer controls - knotter splicer carriage controls - pre-set length/full cone monitors. Warping machine monitors and ontrols - sizing machine monitors and controls - auto-reaching/drawing-in and knotting nachine monitors. Data acquisition system in weaving preparatory and weaving – humidification ystem. Computerised Processing In Textiles Computerised Processing: CAD/CAM/CIM in spinning, Weaving, Dyeing, Printing and upparel production. Electronic Data Interchange and E-com, internet commerce, Business trategy in E-com, Application of E-com in textile industry – Robotics in textile industries. 1. Berkstresser G A, Buchanan D R and Grady P, "Automation in the Textile Industry from Fibres to Apparel", The Textile Institute, UK, 1995. 2. George stylios, "Textile objective measurement and automation in garment manufacture", E.Horwood, 1991. Reference(s): 1. Nalura B C, "Theory and Applications of Automatic Controls", New Age International (P) Ltd Pub, 1998. Ormerod A, "Modern Development in Spinning and Weaving Machinery", Butterworths, 1993. 2. Gordon A. Berkstresser III et.al, "Automation and Robotics in the Textile and Apparel Industries", Noyers Publication Park Ridge, 1996. 3. Textiles Go On-line", The Textile Institute, UK, 1996. 	Syllabus								
60 PTT E 61- FILTRATION TEXTILES Elective Hours/Week Total Credit Maximum Marks VI 3 0 0 45 3 40 60 100 Introduction About Control System main and transducers: Functional Description of Instruments; Types and pplications of Instrumentation - generalized configuration - Tribo electric pick-up, Infrared ransducers - Torque Measurement Elastic transducers - sound level meter - vibration neasurements. Control System Components: Basics of control system - Control system 9 xamples - Stepper motors - Hydraulic valves - Pneumatic switches, proximity switches and apper valves - Hydraulic and Pneumatic automation in textile machines- simple equential logic circuit design - Programmable Logic Controllers (PLC), Block diagram programming methods - programs - applications of PLC in textile machines. 9 dustrial Automation: Introduction, integration, material handling system, simple systems for notions by electrical and mechanical devices - Mechanical design for automatic feeding seembly and transfer lines. Electronic Textile Instruments: Electronic brainel be releves. 9 control System & Automation in Spinning Machinery: Machinery material flow and its ariation controls - Feeder and Stop motions - Autor leveleres - safety switches. Production plinning und pro-seing Machinery: Yan clearer controls - knotter splicer carriage controls - pre-set length/full cone monitors. Warping machine monitors and ontrols - sizing machine monitors and controls - auto-reaching/drawing-in and Monting and proter splicer carriage controls - pre-set length/full cone monitors. Warping mac		K.S.I	Rangasamy				nous R202	2	
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VI 3 0 0 45 3 40 60 100 troduction About Control System strumentation and Transducers: Functional Description of Instruments; Types and pplications of Instrumentation - generalized configuration - Tribo electric pick-up, Infrared ransducers - Torque Measurement Elastic transducers - sound level meter - vibration neasurements. Control System Components: Basics of control system - Control system apper valves - Hydraulic and Pneumatic automation in textile machines- simple equential logic circuit design - Programmable Logic Controllers (PLC), Block diagram programming methods - programs - applications of PLC in textile machinery. Industrial automation dustrial automation: Introduction, integration, material handling system, simple systems for notions by electrical and mechanical devices- Nechanical design for automatic feeding seembly and transfer lines. Electronic Textile Instruments: Electronic principles in evenness eater, classification of faults, digital fibrograph, hairiness meter, Vibroscope - thickness neasuring instruments, HVI, AFIS, Universal tensile testers. Control System and Automation in Spinning Machinery: Machinery material flow and its anation controls - Feeders and Stop motions - Auto levelers - safety switches. Production nd quality monitors - Full doff and pre-set length/full cone monitors. Data acquisition system for pinning preparatory, ring spinning and rotor spinning. On-line monitoring system, case tudies. 9 Control System & Automation in Weaving Machinery: Yarn clearer controls - knotter splicer carriage controls - pre-set length/full cone monitors. Warping machine monitors and ontrols - sizing machine monitors and controls - auto-reaching/drawing-in and knotting seem. 9 9 <th>Elective</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Elective								
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4. Vassiliadis S G, "Automation and the Textile Industry", Eurotex, 1996.									
							996.		
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Passed in BoS Meeting held on 12/05/2023 Approved in Academics Council Meeting held on 03/06/2023

00 BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

S.No.	Торіс	Total Hours
1.1	Introduction to Control System and Instrumentation: Functional Description of Instruments	2
1.2	Types and Applications of Instrumentation: Tribo Electric Pick-up, Infrared	2
1.2	Transducers, Torque Measurement	2
1.3	Elastic Transducers, Sound Level Meter, Vibration Measurements	2
1.4	Control System Components: Basics, Stepper Motors, Hydraulic Valves,	2
	Pneumatic Switches, Proximity Switches	
1.5	Hydraulic and Pneumatic Automation in Textile Machines: Simple Sequential Logic Circuit Design	2
1.6	Programmable Logic Controllers (PLC): Block Diagram, Programming	2
	Methods, and Applications in Textile Machinery	
2.1	Introduction to Industrial Automation: Integration and Material Handling Systems	2
2.2	Simple Systems for Motion by Electrical and Mechanical Devices: Automatic	2
	Feeding, Assembly, and Transfer Lines	
2.3	Electronic Textile Instruments: Evenness Tester, Fault Classification, Digital Fibrograph, Hairiness Meter	2
2.4	Thickness Measuring Instruments, HVI, AFIS, and Universal Tensile Testers	3
3.1	Control System and Automation in Spinning Machinery: Material Flow,	3
	Feeders, Stop Motions, Auto Levelers, Safety Switches	
3.2	Production and Quality Monitors: Full Doff and Pre-Set Length Monitors	2
3.3	Data Acquisition Systems in Spinning Preparatory, Ring Spinning, and Rotor	2
	Spinning	
3.4	On-line Monitoring System in Spinning Industry: Case Studies	2
4.1	Control System and Automation in Weaving Machinery: Yarn Clearer Controls, Knotter/Splicer Carriage Controls	2
4.2	Warping and Sizing Machine Monitors and Controls: Auto-Reaching,	2
	Drawing-in, Knotting Machine Monitors and Controls	
4.3	Data Acquisition Systems in Weaving Preparatory and Weaving: Humidification Systems	2
5.1	Computerized Processing: CAD/CAM/CIM in Spinning, Weaving, Dyeing,	3
	Printing, and Apparel Production	Ŭ
5.2	Electronic Data Interchange (EDI) and E-Commerce: Internet Commerce,	3
	Business Strategy, and Applications in Textiles	_
5.3	Robotics in Textile Industries: Applications and Case Studies Designer(s)	3

1. Dr Saravanan.K - saravanan.k@ksrct.ac.in

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT E62	Project Planning and	Category	L	Т	Ρ	Credit
00 PTT E02	Management	PC	3	0	0	3

- To understand the basics of project management
- To gain knowledge on planning and budgeting process
- To know about conflict management techniques

Pre-requisites

• Nil

Course Outcomes

On the	successful of	completion of	the course, s	students will b	be able to					
CO1	Explain th	Explain the project formulation and responsibilities of project manager								
CO2	Understa	nd the metho	ds of plannin	g and budget	ing process	Understar	nd			
CO3	Gain kno	wledge on sc	heduling and	resource allo	ocation	Apply				
CO4	Understa	nd the desigr	ning of contro	l system		Understar	nd			
CO5	Impart kr	nowledge on p	project organi	ization and C	onflict manag	ement Apply				
Mappii	ng with Pro	gramme Out	comes							
COs				POs						
COS	1	2	3	4	5	6				
CO1	3	2	3	3	2	3				
CO2	2	2	3	3	3	3				
CO3	3	2	3	3	3	3				
CO4	3	2	3	3	3	3				
CO5	3 2 3 3 3 3 3									
3 - Stro	ong; 2 - Mec	lium; 1 - Som	е							

Bloom's	Continuous As	sessment Tests arks)	End Sem Examination (Marks)
Category	1	2	
Remember	30	10	20
Understand	30	10	40
Apply	-	40	40
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Syllabus								
	K.S.R	angasamy		f Technolog Fextile Tech		nous R202	2	
		60 PTT F		ct Planning		ment		
	Н	ours/Weel		Total	Credit		ximum Mar	ks
Elective	L	T	P	Hours	C	CA	ES	Total
VI	3	0	0	45	3	40	60	100
ntroductio	n To Project	Managem	ent					
	nagement – project mana						s; project	9
Planning a	nd Budgeting	g			• •			
	ocess – work Methods; co nt							9
PERT & C Gantt char	J & Resource PM Networks ts, expediting Goldratt's Crit	s, crashing g a proje	; project u					9
Control an	d Completior	า						
	or-Control cyc em; project ev				j; project co	ntrol; desi	gning the	9
Project Org	anisation &	Conflict M	anagemen	nt				
	anisation strue						conflict -	9
Ŭ							tal Hours:	45
Text Book	s):							
1. Cliffo	ord Gray and	Erik Larsor	i, Project M	lanagement,	Tata McGrav	v Hill Editio	n,2010	
2. Gido	and Clement	ts, Success	ful Project	Managemen	t, 5thEdition,	Thomson L	_earning, 20	11
Reference(/							
1. Harv	ey Maylor, Pr	oject Mana	igement, 4t	hEdition, Pea	arson Educat	ion, 2010.		
.,	M. Nicholas,	•	•		and Techno	logy - Princ	iples	
2. and	Practice, 4thE	dition, Pea	rson Educa	ation, 2012.				
*SDG 9 – Ir	dustry Innova	ation and Ir	frastructure	Э				

formin Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Course Contents and Lecture Schedule

S. No.	Торіс	Total Hours
1.1	Introduction to Project Management: Definition, Goals, and Lifecycles	2
1.2	Project Selection Methods and Formulation	2
1.3	Project Manager: Roles, Responsibilities, and Selection	2
1.4	Project Teams: Formation and Management	3
2.1	Planning Process: Work Breakdown Structure and Role of Multidisciplinary Teams	2
2.2	Budgeting the Project: Methods and Cost Estimating	2
2.3	Budget Improvement, Uncertainty, and Risk Management in Budgeting	2
3.1	Scheduling: PERT and CPM Networks, Crashing, and Project Uncertainty	2
3.2	Risk Management, Simulation, Gantt Charts, and Expediting a Project	2
3.3	Resource Loading, Leveling, and Allocating Scarce Resources	2
3.4	Goldratt's Critical Chain Method	2
4.1	Control and Completion: Plan-Monitor-Control Cycle	2
4.2	Data Collection, Reporting, and Project Control	2
4.3	Designing the Control System	2
4.4	Project Evaluation, Auditing, and Termination	3
5.1	Formal Organization Structure and Design in Project Management	2
5.2	Types of Project Organizations	2
5.3	Conflict Management: Origin, Consequences, and Conflict Management Methods	2
5.4	Team Methods for Resolving Conflict	3
Course	Designer(s)	

1. Dr N Sukumar - Sukumar @ksrct.ac.in

Formation BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PTT E63	Process Control in Textile Wet	Category	L	Т	Ρ	Credit
00 FTT E03	Processing	PC	3	0	0	3

- To know the basics of process control
- To learn about the determination of fastness and finishing properties
- To understand the importance of eco friendly processing

Pre-requisites

• Nil

Course Outcomes

On the successful completion of the course, students will be able to Understand the importance of process control in chemical											
CO1		Understand									
CO2		processing Onderstand Determine the fastness properties of textile fabrics Apply									
CO2				es of textile		Apply					
CO3			<u> </u>	olour matchi		Apply Understand					
-		U		ls in eco frier	<u> </u>						
CO5				is in eco mer	ialy process	Understand					
марри	ig with Pro	gramme Out	comes	POs							
COs	1	2	3	4	5	6					
CO1	3	2	3	3	2	2					
CO2	3	2	3	3	2	2					
CO3	3	2	3	3	2	2					
CO4	2	2	3	3	2	2					
CO5	3	2	3	3	3	2					
3 - Stro	ong; 2 - Mec	lium; 1 - Som	e								
3 - Strong; 2 - Medium; 1 - Some											

Assessment Patte Bloom's	Continuous As	sessment Tests Irks)	End Sem Examination (Marks)
Category	1	2	-
Remember	30	10	20
Understand	10	10	40
Apply	20	40	40
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

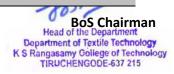
BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Syllabus								
	K.S.I	Rangasamy		f Technolog		nous R202	2	
	60			<u>Fextile Tech</u>				
		Hours/Wee		Control in Te	Credit		ximum Mar	ka
Elective	L		rk P	Total Hours	Credit	CA	ES ES	rs Total
VI	3	0	0	45	3	40	60	100a
	n to Proces	•	0	45	5	40	00	100
Definition of processing n Desizing dentification and Scourt	of Process of – Flow chart I, Scouring, n and estima	control and is indicating Bleaching, ation of resid tion of Res	Process co Souring, M lual starch idual Wax	ntrol – Need ontrol and Qu Mercerizing, – Determinat content and per.	ality control to Dyeing, Prin ion of weight	ests to be c iting and fi loss during	carried out inishing – g Desizing	9
Determina Determinat Determinat	t ion of fastr on of ash on of Bariu xenon Arc la to Dry a	less prope content – E m Activity r amp – Deter	e rties Determination number – S mination c	on of Whiter Shrinkage of of fastness t etermination	fabric – De to Washing	eterminatior – Determi	n of Light ination of	9
Determinat – Determin efficiency c inished fab of Dispersi dentificatio	ation of effi f Resin finis ric, Evaluatio ng agent – n of various	ncy of Water ciency of Si shing by CR on of efficier Evaluation fibres like C	Proofing - tarching, by A. Estimatincy of wettin of efficie otton, Visco	- Determinati y Bending le ion of residu ng agent by S ncy of deter ose, Polyeste	ngth methoo al formaldeh Sinking Time rgents by F	d – Determ yde preser method – I oam stabil	nination of nt in resin Evaluation ity test –	9
Estimation Computer imitations	Colour mate -Working pri	dyes by Dy ching – Adv nciple of co	eing Trails vantages o mputer colo	and by using f Computer our matching – Estimation	colour matcl – Estimation	hing syster	m and its of Sodium	9
Necessary Ban –List c of chemica isted chen	f banned Ar s and auxilia	dly processi nines and C aries in the e 14000 certi	Chemicals - export fabri ification. B	ept of Eco-Fr - Alternatives cs – Possible rief mention	 Eco-label sources of 	lingTolera contaminat	nce limits ion of red	9
						Tot	tal Hours:	45
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Z. E.He	prwood, 199		ctive measu	irement and a	automation ir	n garment n	nanufacture	",
Reference		A	-B 8 -	£ At	O a valor i la " hi			
I. Pub	1998.		-	of Automatic				•
2. Gore		stresser III	et.al, "Au	pinning and \ tomation and Ige, 1996.				
				te, UK, 1996.				
				extile Industry	" Furotex 1	996		
	ndustry Innov				, Earotox, 1			
			າເລວແບບເບເຊ	5				

SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy

Course Contents and Lecture Schedule

Passed in BoS Meeting held on 12/05/2023 Approved in Academics Council Meeting held on 03/06/2023



S.No.	Торіс	Total Hours
1.1	Introduction to Process Control and Quality Control: Definitions and Need in Textile Wet Processing	2
1.2	Process Control and Quality Control Flowcharts for Desizing, Scouring, Bleaching, Souring, Mercerizing, Dyeing, Printing	2
1.3	Residual Starch Identification and Estimation, Determination of Weight Loss during Desizing and Scouring	2
1.4	Estimation of Residual Wax Content and Total Wax Content by Soxhlet Extraction Method, Estimation of Copper Number	3
2.1	Determination of Fastness Properties: Ash Content, Whiteness, Whiteness Retention, Barium Activity Number	2
2.2	Determination of Shrinkage, Light Fastness, and Washing Fastness	2
2.3	Fastness to Dry and Wet Rubbing, Alkaline and Acidic Perspiration	2
3.1	Determination of Efficiency of Water Proofing, Flame Proofing, and Starching by Bending Length Method	2
3.2	Determination of Efficiency of Resin Finishing by CRA, Residual Formaldehyde Estimation	2
3.3	Evaluation of Wetting Agent by Sinking Time Method, Dispersing Agent and Detergents by Foam Stability Test	2
3.4	Identification of Various Fibres: Cotton, Viscose, Polyester, Wool, Acrylic, and Nylon	3
4.1	Estimation of Purity of Dyes by Dyeing Trials and Spectrophotometer	2
4.2	Concept and Working Principle of Computer Colour Matching: Advantages and Limitations	2
4.3	Estimation of Purity of Chemicals (Sodium Hydrosulphite, Sodium Nitrite, Sodium Silicate, Hydrogen Peroxide Strength)	2
5.1	Introduction to Eco-Friendly Processing: Concept, German Ban, List of Banned Amines and Chemicals, and Alternatives	3
5.2	Eco-Labelling, Tolerance Limits of Chemicals and Auxiliaries in Export Fabrics	2
5.3	Possible Sources of Contamination of Red-Listed Chemicals, ISO 14000 Certification, and Instruments for Eco Parameters	2

Course Designer(s)

1. P Maheswaran – pmaheswaran@ksrct.ac.in

00 BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

	ENGLISH FOR RESEARCH	Category	L	Т	Ρ	Credit
60 PAC 001	PAPER WRITING	PC	2	0	0	0

- Teach how to improve writing skills and level of readability
- Tell about what to write in each section
- Summarize the skills needed when writing a Title
- Infer the skills needed when writing the Conclusion
- Ensure the quality of paper at very first-time submission

Pre-requisites

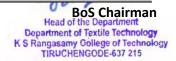
• Nil

Course Outcomes

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

CO1		Understand that how to improve your writing skills and level of readability								
CO2	Learn a	bout what to	write in eac	ch section		Apply				
CO3	Underst	and the skill	s needed w	hen writing a	a Title	Understand				
CO4	Underst	and the skill	s needed w	hen writing t	he Conclusi	on Understand				
CO5	Ensure	the good qua	ality of pape	er at very firs	t-time subm	ission Analyse				
Mappi	ng with Pro	gramme Out	comes							
COs				POs						
COS	1	2	3	4	5	6				
CO1	2	3	2	2	2	2				
CO2	2	3	2	2	2	2				
CO3	2	3	2	2	2	2				
CO4	2	3	2	2	2	2				
CO5	2	3	2	2	3	2				
3 - Strong; 2 - Medium; 1 - Some										

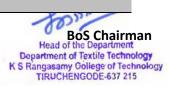
Assessment Pattern Continuous Assessment Tests (Marks) Bloom's Category 1 2 Remember 10 10 Understand 20 50 30 Apply -Analyse --Evaluate --Create _ _ 60 Total 60



K.S.Rangasamy College of Technology – Autonomous R2022											
M. Tech Textile Technology											
60 PCA 001 - English for Research Paper Writing Hours/Week Total Credit Maximum Mar											
Semester		T	K	Hours	Credit	CA	ES	Total			
	I/II 2 0 0 30 0 100 -										
		•	-		0	100		100			
Introduction to Research Paper Writing Planning and Preparation, Word Order, Breaking up long sentences, Structuring											
	is and Sent							6			
U 1	and Vaguer					, ,					
Presenta	ation Skills							6			
Clarifying	Who Did \	Vhat, Hig	hlighting	Your Findir	ngs, Hedgir	ng and C	riticizing,				
	ing and Plag	giarism, Se	ections of a	a Paper, Ab	stracts, Intro	oduction					
	ting Skills							6			
	are needed										
	key skills ar										
0	Review of th	e Literatur	e, Methoo	ls, Results,	Discussion,	Conclusi	ons, The				
Final Che											
	/riting Skills						Dessilie	6			
	needed whe										
Skills are Conclusio	needed whe	en writing	the Discu	ssion, skills	are needed	a when w	riting the				
	ion Skills							6			
	rases, check	ina Plaai	arism hov	v to ensure	naner is a	e hoon a	t could	0			
	e the first tim					s yoou as					
pooolory o						Tot	tal Hours:	30			
Text Book	(s):										
1. Adr	ian Wallwork	, English f	for Writing	Research F	Papers, Spri	nger New	York Dorc	lrecht			
Hei	delberg Lond										
	R How to V	/rite and F	Publish a S	cientific Pap	per, Cambrid	dge Unive	rsity Press	2006			
Reference	• •										
	dbort R Writ	ing for Sc	ience, Ya	le University	/ Press (ava	ailable on	Google B	ooks)			
200											
/	hman N, Ha	ndbook of	Writing fo	or the Mathe	ematical Sc	iences, Sl	AM. Highr	nan's			
bod	DOOK 1998.										
								s, 2018			
	<u>lhir S. Pandh</u>				ng Skills, No	tion Press	5, 2017.				
	ndustry Innova Good Health			9							

SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy

Course Contents and Lecture Schedule



S.No.	Торіс	Total
		Hours
1.1	Introduction to Research Paper Writing: Planning and Preparation, Word Order	2
1.2	Breaking Up Long Sentences, Structuring Paragraphs and Sentences	2
1.3	Being Concise, Removing Redundancy, Avoiding Ambiguity and Vagueness	2
1.4	Practical Exercise: Structuring and Simplifying Sentences	3
2.1	Presentation Skills: Clarifying Who Did What, Highlighting Your Findings	2
2.2	Hedging and Criticizing, Paraphrasing and Plagiarism	2
2.3	Sections of a Paper: Abstracts, Introduction	2
2.4	Practical Session: Developing Presentation Skills for Paper Writing	3
3.1	Title Writing Skills: Writing Effective Titles and Abstracts	2
3.2	Writing the Introduction, Review of Literature	2
3.3	Writing Methods, Results, and Discussion Sections	2
3.4	The Final Check: Conclusions and Ensuring Quality	3
4.1	Result Writing Skills: Writing the Methods Section	2
4.2	Writing the Results Section: Key Skills and Presentation	2
4.3	Writing the Discussion Section	2
4.4	Writing the Conclusions Section	2
5.1	Verification Skills: Useful Phrases, Checking for Plagiarism	2
5.2	Ensuring the Paper is Submission-Ready	2
5.3	Final Session: Peer Review and Practical Exercise in Verification	3
Course	Designer(s)	

1. Dr Palaniappan A. - palaniappan@ksrct.ac.in

BoS Chairman Head of the Department Dopartment of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PAC 002	DISASTER MANAGEMENT	Category	L	Т	Ρ	Credit
00 FAC 002	DISASTER MANAGEMENT	PC	2	0	0	0

- Summarize basics of disaster
- Explain a critical understanding of key concepts in disaster risk reduction and humanitarian response.
- Illustrate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
- Describe an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.
- Develop the strengths and weaknesses of disaster management approaches Teach how to improve writing skills and level of readability

Pre-requisites

• Nil

Course Outcomes

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

CO1	Ability to	summarize	basics of d	isaster			Understand			
CO2		Ability to explain a critical understanding of key concepts in disaster risk reduction and humanitarian response.								
CO3		Ability to illustrate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.								
CO4	respons	Ability to describe an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.								
CO5	Ability to develop the strengths and weaknesses of disaster management approaches						Analyse			
Mappi	ing with Pro	gramme Out	comes							
COs				POs						
005	1	2	3	4	5		6			
CO1	2	1	2	2	2		1			
CO2	3	2	2	3	2		2			
CO3	2	2	3	3	3		2			
CO4	2	2	3	3	2		2			
CO5	3	3 2 3 3 3 3								
3 - Sti	3 - Strong: 2 - Medium: 1 - Some									

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern						
Bloom's	Continuous Assessment Tests (Marks)					
Category	1	2				
Remember	10	10				
Understand	10	20				
Apply	20	30				
Analyse	20	-				
Evaluate	-	-				
Create	-	-				
Total	60	60				

Syllabus

Passed in BoS Meeting held on 12/05/2023 Approved in Academics Council Meeting held on 03/06/2023 BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

	K.S.Ra	angasamv	College o	f Technolog	y – Autonon	nous R202	2		
			M. Tech	Fextile Techi	nology				
60 PCA 002 – Disaster Management									
-		ours/Weel		Total	Credit		Maximum Mar		
Semester	L	T	P	Hours	C	CA	ES	Total	
/	2	0	0	30	0	100	-	100	
	efinition, F			cance; Diffe isters: Diffe				[6]	
Economic I Natural Dis And Famin	asters: Eart es, Landsli Industrial A	oss of Hu hquakes, des And accidents,	uman and Volcanism Avalanche	ds I Animal Lif ns, Cyclones es, Man-ma s And Spills	s, Tsunamis ide disaster	, Floods, [: Nuclear	Droughts Reactor	[6]	
Disaster F Study of S Avalanches To Tsunam	eismic Zon ; Areas Pro ; Post-Disa	s In India les; Areas one to Cyo ster Disea	s Prone t clonic and ases and E	•				[6]	
Preparedne Evaluation other Agene	of Risk: Ap cies, Media	oring of oplication	Phenome of Remote	nt ena Trigger e Sensing, I ental and Co	Data from N	Meteorolog	ical and	[6]	
Disaster Ri	sk: Concept sk Situatior ssment an	n. Technie	ques of R	aster Risk R lisk Assessi le's Particij	ment, Globa	al Co-Ope	ration in	[6]	
						Tot	al Hours:	30	
Text Book(s):								
^{1.} & De	ep Publicati	ion Pvt. Lt	d., New D					-	
^{2.} strate	gies "'New			anagement ny,2007.	in India: Per	spectives,	issues an	d	
Reference(s									
^{1.} Hall of	of India, 200)1.		itigation Exp				entice	
2. Subra	amanian R,"	Disaster M	lanagemei	nt", Vikas pu	blishing Hou	sing Pvt. L	td., 2018.		
				andbook of atural Disaste		-		uction 8	
4 Janki	Andharia, D		•	loring Interse					
SDG 9 – Inc	ger, 2020. lustry Ippova	tion and In	fractructur	2					
**SDG 3 – G		and Well Be	eing	5					

***SDG 7 – Affordable and Clean Energy



Course Contents and Lecture Schedule

S.No.	Торіс	Total
		Hours
1.1	Introduction to Disaster: Definition, Factors, and Significance	2
1.2	Difference Between Hazard and Disaster	2
1.3	Natural and Manmade Disasters: Differences, Nature, Types, and Magnitude	2
1.4	Case Studies on Natural and Manmade Disasters	3
2.1	Economic Damage and Loss of Human and Animal Life Due to Disasters	2
2.2	Destruction of Ecosystems: Case Studies	2
2.3	Natural Disasters: Earthquakes, Volcanism, Cyclones, Tsunamis, Floods,	2
	Droughts, Famines, Landslides, and Avalanches	
2.4	Manmade Disasters: Nuclear Reactor Meltdown, Industrial Accidents, Oil	3
	Spills, Disease Outbreaks, War, and Conflicts	
3.1	Disaster-Prone Areas in India: Seismic Zones	2
3.2	Areas Prone to Floods, Droughts, Landslides, and Avalanches	2
3.3	Cyclonic and Coastal Hazards with Special Reference to Tsunamis	2
3.4	Post-Disaster Diseases and Epidemics	3
4.1	Disaster Preparedness: Monitoring of Phenomena Triggering a Disaster or	2
	Hazard	
4.2	Evaluation of Risk: Remote Sensing and Data from Meteorological Agencies	2
4.3	Role of Media and Governmental Preparedness	2
4.4	Community Preparedness: Strategies and Case Studies	2
5.1	Disaster Risk: Concept, Elements, and Risk Reduction	2
5.2	Global and National Disaster Risk Situation	2
5.3	Techniques of Risk Assessment and Global Cooperation in Risk Assessment	2
5.4	People's Participation in Risk Assessment and Strategies for Survival	3

Course Designer(s)

1. Dr N Sukumar - sukumar@ksrct.ac.in

formin BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

60 PAC 003	CONSTITUTION OF INDIA	Category	L	Т	Ρ	Credit
00 FAC 003		PC	2	0	0	0

- Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
- To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional. Role and entitlement to civil and economic rights as well as the emergence nation hood in the early years of Indian nationalism.
- To address the role of socialism in India after the commencement of the Bolshevik Revolutionin1917and its impact on the initial drafting of the Indian Constitution.

Pre-requisites

• Nil

Course Outcomes

	e e alte e line							
On the				students will b				
CO1	Discuss t Indians b	Understand						
CO2	Discuss t the conce	Analyse						
CO3	CO2AnalyseCO3Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.Apply							
CO4	Discuss the passage of the Hindu Code Bill of 1956.						Understand	
CO5	5 Discuss the role and functioning of election commission of India.						Analyse	
Mappi								
<u> </u>				POs				
COs	1	2	3	4	5		6	
CO1	3	2	2	2	1		1	
CO2	3	3	2	3	2		2	
CO3	3	3	3	3	2		2	
CO4	2	2	2	3	2		2	
CO5	2	2	3	3	2		3	
3 - Str	ona: 2 - Mec	lium: 1 - Som	e					

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern						
Bloom's	Continuous Assessment Tests (Marks)					
Category	1	2				
Remember	10	10				
Understand	10	20				
Apply	20	30				
Analyse	20	-				
Evaluate	-	-				
Create	-	-				
Total	60	60				

Passed in BoS Meeting held on 12/05/2023 Approved in Academics Council Meeting held on 03/06/2023

BoS Chairman Head of the Department Department of Textile Technology K S Rangasamy College of Technology TIRUCHENGODE-637 215

Syllabus								
	K.S.Ra	angasamy		f Technolog		nous R202	2	
M. Tech Textile Technology 60 PCA 003 – Constitution of India								
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Comosto		ours/Weel		Total	Credit		Maximum Marl	
Semeste	r L 2	<u>Т</u> 0	P 0	Hours 30	C 0	CA 100	ES	Total
	_	•	J.		0	100	-	100
	f Making of T prafting Comm							[3]
	hy of The Inc , Salient Feat		stitution					[3]
Fundame Right to	o f Constitut ntal Rights, R Freedom c onal Remedie	ight to Ec	quality, Rig on, Cultu	ht to Freed ral and E	ducational	Rights, F	Right to	[6]
Parliamer Functions	f Governanc at, Composit , Executive, ent and Trans	ion, Qu Preside	ent, Gove	ernor, Cour	ncil of Mi	nisters, J		[6]
District's Mayor an raj: Introc Panchaya departme	dministration Administratio d role of Elect luction, PRI: at: Position a nts), Village I t democracy.	n head: ted Repr Zila Par and role.	esentative ichayat. E Block le	, CEO, Mur lected offici evel: Organ	nicipal Corp ials and the izational H	oration. Pa eir roles, C ierarchy (anchayat CEO Zila Different	[6]
Election	Commission Commission: Commissione	Role an						[6]
						Tot	al Hours:	30
Text Book	(s):							
	e Constitution		·	,.				
	si S N, Ambeo	lkar B R,	"Framing	of Indian Co	nstitution",1	st Edition,	2015.	
Reference	<u> </u>							
	n, M P, "India							
	su, D D, "Intro							
3. Bh	ansali S R., "T	extbook	on The Co	nstitution of	India", Univ	versal Pub	lishers, 20	15
4. Jai	n, M P., "Outli	nes of Ind	dian Legal	and Constit	tutional Hist	ory", Lexis	Nexis, 20	4
	ndustry Innova							

SDG 3 – Good Health and Well Being *SDG 7 – Affordable and Clean Energy

formin Bos Chairman Head of the Department Department of Textile Technology K S Rangasamy Gollege of Technology TIRUCHENGODE-637 215

Course Contents and Lecture Schedule

S.No.	Торіс	Total
		Hours
1.1	History of the Making of the Indian Constitution: Drafting Committee, Composition, and Working	2
1.2	Philosophy of the Indian Constitution: Preamble and Salient Features	2
2.1	Fundamental Rights: Right to Equality, Right to Freedom, Right Against Exploitation	2
2.2	Right to Freedom of Religion, Cultural and Educational Rights, Right to Constitutional Remedies	2
2.3	Directive Principles of State Policy, Fundamental Duties	2
3.1	Parliament: Composition, Qualifications, Disqualifications, Powers and Functions	2
3.2	Executive: President, Governor, Council of Ministers	2
3.3	Judiciary: Appointment and Transfer of Judges, Qualifications, Powers and Functions	2
4.1	Local Administration: Role of District's Administration Head, Mayor, and CEO of Municipal Corporation	2
4.2	Panchayat Raj: Zila Panchayat, Elected Officials, CEO Zila Panchayat, Block and Village Level Administration	2
4.3	Importance of Grassroot Democracy	2
5.1	Election Commission: Role and Functioning	2
5.2	Chief Election Commissioner, Election Commissioners, and Welfare Institutions for SC/ST/OBC and Women	2

1.

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