K.S.Rangasamy College of Technology

(Autonomous)

CURRICULUM AND SYLLABI

Of

B.Tech. Textile Technology

(For the batch admitted in 2023 – 2024)

R 2022

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

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

Passed in BoS Meeting held on 22/12/2022
Approved in Academic Council Meeting held on 07/01/2023

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

B.Tech. Textile Technology

VISION OF THE DEPARTMENT

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

MISSION OF THE DEPARTMENT

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

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1: **Production Process and Solutions to Problems**: Graduates are competent in textile production processes and be able to identify problems and suggest suitable solutions.

PEO2: **Modern Tools & Technology and Ethics**: Graduates use latest tools and technology for the production of textile materials and serve society in an ethical manner.

PEO3: **Skills, Entrepreneurship and Life Long Learning**: Graduates will exhibit skills in their career and develop entrepreneurial culture through life-long learning.

PROGRAMME OUTCOMES (POs)

Engineering Graduates will be able to:

PO1: **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: **Design /development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations

PO6: **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

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PO10: **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

Engineering Graduates will be able to:

PSO1: **Application of Basic Concepts**: Apply fundamental concepts in the areas of spinning, weaving, testing, garment making and processing.

PSO2: **Solution for Industrial Problems**: Solve industrial problems in textile industries considering environmental issues to improve quality and productivity.

PSO3: **Moral Values**: Demonstrate social and ethical responsibilities relevant to textile industries.

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

Programme Educational Objectives	Programme Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PEO 1	3	3	3	3	3	2	2	1	3	2	3	2
PEO 2	2	2	3	2	3	2	2	3	2	2	2	2
PEO 3	3	2	2	2	2	2	1	1	3	2	3	3

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

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MAPPING – UG -TEXTILE TECHNOLOGY

Year	Semester	Name of the Subject	Pos												PSOs		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
I	I	Professional English I	-	-	-	-	-	-	-	2	3	3	2	3	2	2	3
		Matrices and Calculus	3	3	3	3	3	-	-	-	-	-	-	2	3	2	1
		Physics for Textile Technology	3	3	-	-	-	-	2	3	-	2	-	2	-	2	-
		Chemistry for Textile	3	2	2	-	-	-	2		-	-	-	2	-	-	-
		Engineering Drawing	3	3	3	-	-	-	-	-	-	-	-	-	3	3	3
		Environmental Studies and climate Change	3	2	-	-	-	2	2	-	-	-	-	2	-	-	-
		Heritage of Tamils / *தமிழர் மரபு*	3	3	-	-	-	-	-	-	-	-	2	-	2	-	-
		Applied Physics and Chemistry Laboratory	3	2	-	-	-	-	-	-	3	2	-	3	3	2	2
		Fabrication and Reverse Engineering Laboratory	-	-	-	-	-	-	-	2	3	3	2	3	2	2	3
	II	Professional English II	3	3	-	-	-	-	-	-	-	-	-	2	3	2	0
		Integrals, Partial Differential Equations and Laplace Transform	3	2	-	-	-	-	-	-	-	-	2	3	2	3	1
		Basic Electrical, Electronics and Instrumentation	3	3	-	-	-	-	-	-	-	-	-	-	2	3	-
		Engineering Mechanics	3	3	-	-	-	-	-	-	2	2	-	2	3	3	
		C Programming	3	3	-	-	-	-	-	-	-	-	-	-	3	3	2
		Fibre Science	1	1	-	-	-	-	-	-	-	-	-	-	-	-	3
		NCC/NSS/NSO/YRC/RRC/Fine Arts*	-	-	-	-	-	-	3	3	-	2	-	3	2	1	3
		Tamils and Technology / *தமிழரும் தொழில்நுட்பமும்*	3	2	-	-	3	-	-	-	2	-	2	2	2	3	-
		Basic Electrical, Electronics and Instrumentation Laboratory	3	2	-	-	3	-	-	-	2	-	2	2	2	3	-
		C Programming Laboratory	-	-	-	-	-	-	-	2	3	3	2	3	3	3	-
		Career Skill Development I	-	-	-	-	-	-	-	2	3	3	2	3	2	2	2
		Internship	3	2	2	3	2	2	-	-	-	2	3	-	3	2	-
II	III	Optimization Techniques and Numerical Methods	3	-	-	-	-	-	1	-	-	2	-	1	3	3	-

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		Elements of Mechanical Engineering	3	-	-	-	-	-	-	-	-	1	2	2	3	3	-
		Structure and Properties of Fibers	3	3	-	-	-	-	-	-	-	-	-	-	3	2	-
		Yarn Manufacturing Technology I	3	3	-	-	-	-	-	-	-	-	-	-	3	3	1
		Fabric Manufacturing Technology I	3	-	3	-	-	-	-	-	-	-	-	-	3	3	1
		Fibre Science Laboratory	3	-	3	-	-	-	-	-	2	-	-	2	3	3	3
		Yarn Manufacturing Technology Laboratory I	3	-	3	-	-	-	-	-	2	-	-	2	3	3	3
		Career Skill Development II	-	-	-	-	-	-	-	2	3	3	2	3	2	2	-
		Internship	3	2	2	3	2	2	-	-	-	2	3	-	3	2	-
	IV	Applied Statistics	3	3	-	-	2	-	-	-	-	-	-	-	3	-	-
		Yarn Manufacturing Technology II	3	3	2	-	-	-	-	-	-	-	3	-	3	3	1
		Fabric Manufacturing Technology II	3	2	-	-	-	-	-	-	-	-	-	-	2	2	1
		Textile Chemical Processing I	3	3	2	-	-	-	-	-	-	-	-	-	3	2	-
		Profession Elective I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Open Elective I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Universal Human Values*	3	3	2	-	-	3	3	3	3	-	-	3	1	1	3
		NCC/NSS/NSO/YRC/RRC/Fine Arts*	3	2	1	1	-	-	-	-	-	-	-	-	-	-	3
		Yarn Manufacturing Technology Laboratory II	3	3	2	-	-	-	-	-	-	-	-	-	3	3	1
		Fabric Manufacturing Technology Laboratory	3	3	-	-	-	-	-	-	-	-	-	-	3	2	2
		Career Skill Development III	3	3	3	3	-	-	-	-	-	-	-	-	3	-	2
		Internship	3	2	2	3	2	2	-	-	-	2	3	-	3	2	-
III	V	Knitting Technology	3	-	-	-	-	-	-	-	-	-	-	-	3	2	-
		Textile Chemical Processing II	3	-	-	-	-	-	-	-	-	-	-	-	3	3	-
		Woven Fabric Structure	3	-	-	-	-	-	-	-	-	-	2	2	2	2	-
		Technical Textiles I	3	-	-	-	-	-	-	-	-	-	-	-	3	3	2
		Profession Elective II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Open Elective II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Startups & Entrepreneurship	3	3	3	3	3	2	2	1	-	1	3	3	3	3	-
		Textile Chemical Processing Laboratory	3	3	-	-	-	-	-	-	-	-	1	-	3	3	-
		Fabric Structure Laboratory	3	1	-	-	-	-	-	-	-	-	-	2	3	2	-

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		Design Thinking And Innovation Laboratory	3	3	3	3	-	-	-	-	-	-	-	-	3	3	-
		Career Skill Development IV	2	2	2	2		2	-	-	-	2	3	3	3	-	-
		Internship	3	2	2	3	2	2	-	-	-	2	3	-	3	2	-
	VI	Total Quality Management	1	2	-	-	-	-	-	-	-	-	-	1	2	2	-
		Textile and Apparel Quality Evaluation	2	2	2	2	3	-	-	-	-	-	-	2	2	2	-
		Garment Manufacturing Technology I	2	3	2	-	-	-	-	-	-	-	2	2	2	3	-
		Technical Textiles II	2	2	1	-	-	-	-	-	-	-	-	-	3	3	-
		Profession Elective III	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Open Elective III	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		NCC/NSS/NSO/YRC/RRC/Fine Arts*	1	1	-	-	-	-	-	-	-	-	-	-	1	1	3
		Garment Construction Laboratory I	3	3	-	-	-	3	-	-	2	1	2	1	3	2	2
		Textile and Apparel Quality Evaluation Laboratory	3	-	-	-	-	-	-	2	1	2	-	2	-	2	2
		Design Thinking and Product Development Laboratory	3	3	3	3	-	-	-	-	-	-	-	-	3	3	-
		Comprehension Test	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Internship	3	2	2	3	2	2	-	-	-	2	3	-	3	2	-
IV	VII	Garment Manufacturing Technology II	3	3	-	-	-	-	-	-	-	-	-	-	2	-	2
		Financial Strategies in Textile and Apparel Industry	2	2	-	3	2	-	-	-	-	-	2	2	-	-	1
		Nonwoven Technology	3	-	2	1	-	-	-	-	-	-	-	-	-	3	-
		Professional Elective IV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Professional Elective V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Research Skill Development	2	2	2	2		2	2	3	3	3	-	3	-	-	-
		NCC/NSS/NSO/YRC/RRC/Fine Arts*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Textile CAD Laboratory	2	-	2	-	3	-	-	-	-	-	-	2	3	-	-
		Garment Construction Laboratory II	3	2	3	-	-	-	-	-	-	-	-	2	2	3	-
		Project Work Phase I	3	3	2	3	2	-	-	2	2	2	1	-	3	2	1
		Internship	3	2	2	3	2	2	-	-	-	2	3	-	3	2	-
	VIII	Project Work Phase II	3	3	2	3	2	-	-	2	2	2	1	2	3	2	1
		Internship	3	2	2	3	2	2	-	-	-	2	3	-	3	2	-

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K.S. RANGASAMY COLLEGE OF TECHNOLOGY
Credit Distribution for B.Tech (Textile) Programme – 2023 – 2024 Batch

S.No.	Category	Credits Per Semester								Total Credits	Percentage (%)
		I	II	III	IV	V	VI	VII	VIII		
1.	HS	2	2	-	-	-	3	-	-	**07**	**4.32**
2.	BS	12	4	4	4	-	-	-	-	**24**	**14.81**
3.	ES	6	14	4	-	-	-	-	-	**24**	**14.81**
4.	PC	-	3	14	13	16	13	14	-	**73**	**45.06**
5.	PE	-	-	-	3	3	3	6	-	**15**	**9.26**
6.	OE	-	-	-	3	3	3	-	-	**09**	**5.56**
7.	CG	0	0	0	0	0	0	2+3*	8	**10**	**6.17**
8.	MC	MC I	-	-	MC II	MC III	-	-	-	**0**	**0.00**
9.	GE	-	GE I	GE II	-	-	-	-	-	**0**	**0.00**
10.	AC	-	-	-	-	-	-	AC	-	**0**	**0.00**
Total		**20**	**23**	**22**	**23**	**22**	**22**	**22**	**8**	**162**	**100**

HS - HUMANITIES AND SOCIAL SCIENCES
BS - BASIC SCIENCE
ES - ENGINEERING SCIENCES
PC - PROFESSIONAL CORE
PE - PROFESSIONAL ELECTIVES
MC - MANDATORY COURSES
OE - OPEN ELECTIVES
CG – CAREER GUIDANCE COURSES
AC – AUDIT COURSES
GE – GENERAL ENGINEERING

- Open Electives are courses offered by different departments that do not have any prerequisites and could be of interest to students of any branch

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K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215
(An Autonomous Institution affiliated to Anna University)

HUMANITIES AND SOCIAL SCIENCE (HS)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 EN 001	Professional English I	HS	3	1	0	2	2	Nil
2.	60 EN 002	Professional English II	HS	3	1	0	2	2	Nil
3.	60 HS 003	Total Quality Management	HS	3	3	0	0	3	Nil
4.	60 AB 00*	National Cadet Corps (Air Wing)	HS	4	2	0	2	3*	Nil
5.	60 AB 00*	National Cadet Corps (Army Wing)	HS	4	2	0	2	3*	Nil

BASIC SCIENCE (BS)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 MA 001	Matrices and Calculus	BS	5	3	1	0	4	Nil
2.	60 MA 003	Integrals, Partial Differential Equations and Laplace Transform	BS	5	3	1	0	4	Nil
3.	60 PH 007	Physics for Textile Technology	BS	3	3	0	0	3	Nil
4.	60 CH 006	Chemistry for Textile	BS	3	3	0	0	3	Nil
5.	60 MA 022	Applied Statistics	BS	5	3	1	0	4	Nil
6.	60 MA 011	Optimization Techniques and Numerical Methods	BS	5	3	1	0	4	Nil
7.	60 CP 0P3	Applied Physics and Chemistry Laboratory	BS	4	0	0	4	2	Nil

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ENGINEERING SCIENCES (ES)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 CS 001	C Programming	ES	3	3	0	0	3	Nil
2.	60 ME 004	Engineering Mechanics	ES	5	3	1	0	4	Nil
3.	60 EE 002	Basic Electrical, Electronics and Instrumentation	ES	3	3	0	0	3	Nil
4.	60 CS 0P1	C Programming Laboratory	ES	4	0	0	4	2	Nil
5.	60 EE 0P2	Basic Electrical, Electronics and Instrumentation Laboratory	ES	4	0	0	4	2	Nil
6.	60 ME 001	Engineering Drawing	ES	6	2	0	4	4	Nil
7.	60 ME 0P1	Fabrication and Reverse Engineering Laboratory	ES	4	0	0	4	2	Nil
8.	60 ME 008	Elements of Mechanical Engineering	ES	5	3	1	0	4	Nil

PROFESSIONAL CORE (PC)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 TT 201	Fibre Science	PC	3	3	0	0	3	Nil
2.	60 TT 301	Structure and Properties of Fibres	PC	5	3	1	0	4	Fibre Science
3.	60 TT 302	Yarn Manufacturing Technology I	PC	3	3	0	0	3	Structure and Properties of Fibres
4.	60 TT 303	Fabric Manufacturing Technology I	PC	3	3	0	0	3	Nil
5.	60 TT 3P1	Fibre Science Laboratory	PC	4	0	0	4	2	Fibre Science
6.	60 TT 3P2	Yarn Manufacturing Technology Laboratory I	PC	4	0	0	4	2	Nil
7.	60 TT 401	Yarn Manufacturing Technology II	PC	3	3	0	0	3	Yarn Manufacturing Technology I
8.	60 TT 402	Fabric Manufacturing Technology II	PC	3	3	0	0	3	Fabric Manufacturing Technology I
9.	60 TT 403	Textile Chemical Processing I	PC	2	2	0	2	3	Nil
10.	60 TT 4P1	Yarn Manufacturing Technology Laboratory II	PC	4	0	0	4	2	Yarn Manufacturing Laboratory I
11.	60 TT 4P2	Fabric Manufacturing Technology Laboratory	PC	4	0	0	4	2	Fabric Manufacturing Technology II
12.	60 TT 501	Knitting Technology	PC	2	2	0	2	3	Nil

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13.	60 TT 502	Textile Chemical Processing II	PC	3	3	0	0	3	Textile Chemical Processing I
14.	60 TT 503	Woven Fabric Structure	PC	3	3	0	0	3	Nil
15.	60 TT 504	Technical Textiles I	PC	3	3	0	0	3	Fibre Science
16.	60 TT 5P1	Textile Chemical Processing Laboratory	PC	3	0	0	3	1.5	Textile Chemical Processing II
17.	60 TT 5P2	Fabric Structure Laboratory	PC	3	0	0	3	1.5	Nil
18.	60 TT 601	Textile and Apparel Quality Evaluation	PC	3	3	0	0	3	Yarn Manufacturing Technology II
19.	60 TT 602	Garment Manufacturing Technology I	PC	3	3	0	0	3	Yarn Manufacturing Technology II
20.	60 TT 603	Technical Textiles II	PC	3	2	0	2	3	Technical Textiles I
21.	60 TT 6P1	Garment Construction Laboratory I	PC	3	0	0	3	1.5	Nil
22.	60 TT 6P2	Textile and Apparel Quality Evaluation Laboratory	PC	3	0	0	3	1.5	Nil
23.	60 TT 701	Garment Manufacturing Technology II	PC	3	3	0	0	3	Garment Manufacturing Technology I
24.	60 TT 702	Financial Strategies in Textile and Apparel Industry	PC	5	3	1	0	4	Nil
25.	60 TT 703	Nonwoven Technology	PC	4	2	0	2	3	Nil
26.	60 TT 7P1	Textile CAD Laboratory	PC	4	0	0	4	2	Fabric Structural Lab
27.	60 TT 7P2	Garment Construction Laboratory II	PC	4	0	0	4	2	Garment Manufacturing Technology II

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PROFESSIONAL ELECTIVE COURSES (PE) / HONOURS

SEMESTER IV, ELECTIVE I

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 TT E 11	High Performance Fibres	PE	3	3	0	0	3	Fibre Science Structure and Properties of Fibres
2.	60 TT E 12	Man Made Fibre Technology	PE	3	3	0	0	3	Structure and Properties of Fibres
3.	60 TT E 13	Textured Yarn Technology	PE	3	3	0	0	3	Yarn Manufacturing Technology
4.	60 TT E 14	Process Control in Spinning	PE	3	3	0	0	3	Yarn Manufacturing Technology I & II
5.	60 TT E 15	Home Textiles	PE	3	3	0	0	3	Fabric Manufacturing Technology
6.	60 TT E 16	Silk Technology	PE	3	3	0	0	3	Fibre Science Structure and Properties of Fibres
7.	60 TT E 17	Fashion Design - Principles and Silhouettes	PE	3	3	0	0	3	Garment Manufacturing Technology

SEMESTER V, ELECTIVE II

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 TT E 21	Fibres for Smart Textiles	PE	3	3	0	0	3	Fibre Science
2.	60 TT E 22	Functional Finishes	PE	3	3	0	0	3	Textile Chemical Processing I
3.	60 TT E 23	Advances in Patternmaking	PE	3	3	0	0	3	Fashion Design and Pattern Making
4.	60 TT E 24	Export Policies and Documentation	PE	3	3	0	0	3	Total Quality Management
5.	60 TT E 25	Protective Textiles	PE	3	3	0	0	3	Fabric Manufacturing Technology
6.	60 TT E 26	Apparel Production Machinery and Equipment	PE	4	2	0	2	3	Garment manufacturing Technology I
7.	60 TT E 27	Colour Communication	PE	3	3	0	0	3	Textile Chemical Processing

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SEMESTER VI, ELECTIVE III

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 TT E 31	Fibre materials for Advanced Technical Textiles	PE	3	3	0	0	3	Fibre Science
2.	60 TT E 32	Process Control in Weaving and Chemical Processing	PE	3	3	0	0	3	Fabric Manufacturing Technology II
3.	60 TT E 33	Industrial Engineering in Textile and Clothing Industry	PE	4	2	0	2	3	Garment manufacturing Technology II
4.	60 TT E 34	Textile Industry and Mill Management	PE	3	3	0	0	3	Yarn Manufacturing and Fabric Manufacturing
5.	60 TT E 35	Medical Textiles	PE	3	3	0	0	3	Technical Textile I &II
6.	60 TT E 36	Production and Operations Management	PE	3	3	0	0	3	Total Quality Management
7.	60 TT E 37	Advances in Pattern Making and Grading	PE	3	3	0	0	3	Garment manufacturing Technology II

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SEMESTER VII, ELECTIVE IV

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 TT E 41	Surface Characteristics of Fibres	PE	3	3	0	0	3	Fibre science
2.	60 TT E 42	Clothing Science	PE	4	2	0	2	3	Knitting Technology
3.	60 TT E 43	ERP and MIS in Apparel Industry	PE	3	3	0	0	3	Garment manufacturing Technology II
4.	60 TT E 44	Textile and Apparel Entrepreneurship	PE	3	3	0	0	3	Garment manufacturing Technology II
5.	60 TT E 45	Smart Textiles	PE	3	3	0	0	3	Technical Textiles I&II
6.	60 TT E 46	Supply Chain Management for Textile and Apparel Industry	PE	3	3	0	0	3	Garment manufacturing Technology II
7.	60 TT E 47	Fashion Brand Management	PE	3	3	0	0	3	Garment Manufacturing Technology II

SEMESTER VII, ELECTIVE V

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 TT E 51	New Millennium Fibres	PE	3	3	0	0	3	Fibre Science
2.	60 TT E 52	Apparel Processing and Clothing Care	PE	4	2	0	2	3	Textile Chemical Processing II
3.	60 TT E 53	Sustainable Textiles and Apparels	PE	3	3	0	0	3	Technical Textile I & II
4.	60 TT E 54	Lean and Six Sigma Concepts for Textiles and Apparel Industry	PE	3	3	0	0	3	Garment manufacturing Technology II
5.	60 TT E 55	Textile Composites	PE	4	2	0	2	3	Nonwoven Technology
6.	60 TT E 56	Apparel Marketing and Merchandising	PE	3	3	0	0	3	Garment manufacturing Technology II
7.	60 TT E 57	Fashion Design: Process, Innovation and Practice	PE	3	3	0	0	3	Fashion Design - Principles and Silhouettes

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SEMESTER VII &SEMESTER VIII, AUDIT COURSES (AC)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 AC 001	Research Skill Development	AC	1	1	0	0	-	-

MANDATORY COURSES (MC)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 MY 001	Environmental Studies and Climate Change	MC	2	2	0	0	0	-
2.	60 MY 002	Universal Human Values	MC	3	3	0	0	3	-
3.	60 MY 003	Startups & Entrepreneurship	MC	2	2	0	0	2*	-

OPEN ELECTIVES I / II / III (OE)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 TT L01	Fibre Science and Technology	OE	3	3	0	0	3	-
2.	60 TT L02	Basics of Textile Technology	OE	3	3	0	0	3	-
3.	60 TT L03	Introduction to Fashion Design	OE	3	3	0	0	3	-
4.	60 TT L04	Industrial Textiles	OE	3	3	0	0	3	-

INTEGRATED COURSES (IC)

S.No.	Course Code	Course Name	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 TT 403	Textile Chemical Processing I	PC	4	2	0	2	3	-
2.	60 TT 501	Knitting Technology	PC	4	2	0	2	3	-
3.	60 TT 603	Technical Textiles II	PC	4	2	0	2	3	-
4.	60 TT 703	Nonwoven Technology	PC	4	2	0	2	3	-
5.	60 TT E 26	Apparel Production Machinery and Equipment	PE	4	2	0	2	3	-
6.	60 TT E 33	Industrial Engineering in Textile and Clothing Industry	PE	4	2	0	2	3	-
7.	60 TT E 42	Clothing Science	PE	4	2	0	2	3	-
8.	60 TT E 52	Apparel Processing and Clothing Care	PE	4	2	0	2	3	-
9.	60 TT E 55	Textile Composites	PE	4	2	0	2	3	-

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CAREER GUIDANCE COURSES (CG)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 CG 0P1	Career Skill Development I	CG	2	0	0	2	1*	-
2.	60 CG 0P2	Career Skill Development II	CG	2	0	0	2	1*	-
3.	60 CG 0P3	Career Skill Development III	CG	2	0	0	2	1*	-
4.	60 CG 0P4	Career Skill Development IV	CG	2	0	0	2	1*	-
5.	60 CG 0P5	Comprehension Test	CG	2	0	0	2	1*	-
6.	60 CG 0P6	Internship	CG	0	0	0	0	3*	-
7.	60 TT 7P3	Project Work Phase I	CG	4	0	0	4	2	-
8.	60 TT 8P1	Project Work Phase II	CG	16	0	0	16	8	-

GENERAL ENGINEERING COURSES (GE)

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C	Prerequisite
1.	60 GE 001	Heritage of Tamils / *தமிழர் மரபு*	GE	1	1	0	0	1*	-
2.	60 GE 002	Tamils and Technology / *தமிழரும் தொழில்நுட்பமும்*	GE	1	1	0	0	1*	-

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SEMESTER I

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
		Induction Programme	-	-	-	-	-	-
THEORY								
1.	60 EN 001	Professional English I	HS	3	1	0	2	2
2.	60 MA 001	Matrices and Calculus	BS	5	3	1	0	4
3.	60 PH 007	Physics for Textile Technology	BS	3	3	0	0	3
4.	60 CH 006	Chemistry for Textile	BS	3	3	0	0	3
5.	60 ME 001	Engineering Drawing	ES	6	2	0	4	4
6.	60 MY 001	Environmental Studies and climate Change	MC	2	2	0	0	0
7.	60 GE 001	Heritage of Tamils / தமிழர் மரபு	GE	1	1	0	0	1*
PRACTICALS								
8.	60 CP 0P3	Applied Physics and Chemistry Laboratory	BS	4	0	0	4	2
9.	60 ME 0P1	Fabrication and Reverse Engineering Laboratory	ES	4	0	0	4	2
			Total	**31**	**15**	**1**	**14**	**20**

SEMESTER II

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	60 EN 002	Professional English II	HS	3	1	0	2	2
2.	60 MA 003	Integrals, Partial Differential Equations and Laplace Transform	BS	4	3	1	0	4
3.	60 EE 002	Basic Electrical, Electronics and Instrumentation	ES	3	3	0	0	3
4.	60 ME 004	Engineering Mechanics	ES	5	3	1	0	4
5.	60 CS 001	C Programming	ES	3	3	0	0	3
6.	60 TT 201	Fibre Science	PC	3	3	0	0	3
7.	60 GE 002	Tamils and Technology / தமிழரும் தொழில்நுட்பமும்	GE	1	1	0	0	1*
PRACTICALS								
8.	60 EE 0P2	Basic Electrical, Electronics and Instrumentation Laboratory	ES	4	0	0	4	2
9.	60 CS 0P1	C Programming Laboratory	ES	4	0	0	4	2
10.	60 CG 0P1	Career Skill Development I	CG	2	0	0	2	1*
			Total	**32**	**19**	**2**	**14**	**23**

Heritage of Tamils[&] additional 1 credit is offered and not account for CGPA.

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SEMESTER III

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	60 MA 011	Optimization Techniques and Numerical Methods	BS	5	3	1	0	4
2.	60 ME 008	Elements of Mechanical Engineering	ES	5	3	1	0	4
3.	60 TT 301	Structure and Properties of Fibers	PC	5	3	1	0	4
4.	60 TT 302	Yarn Manufacturing Technology I	PC	3	3	0	0	3
5.	60 TT 303	Fabric Manufacturing Technology I	PC	3	3	0	0	3
PRACTICALS								
6.	60 TT 3P1	Fibre Science Laboratory	PC	4	0	0	4	2
7.	60 TT 3P2	Yarn Manufacturing Technology Laboratory I	PC	4	0	0	4	2
8.	60 CG 0P2	Career Skill Development II	CG	2	0	0	2	1*
9.	60 CG 0P6	Internship	CG	-	-	-	-	1/2/3*
				31	**15**	**3**	**10**	**22**

SEMESTER IV

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	60 MA 022	Applied Statistics	BS	5	3	1	0	4
2.	60 TT 401	Yarn Manufacturing Technology II	PC	3	3	0	0	3
3.	60 TT 402	Fabric Manufacturing Technology II	PC	3	3	0	0	3
4.	60 TT 403	Textile Chemical Processing I	PC	4	2	0	2	3
5.	60 TT E1*	Professional Elective I	PE	3	3	0	0	3
6.	60 OE L0**	Open Elective I	OE	3	3	0	0	3
7.	60 MY 002*	Universal Human Values*	MC	3	3	0	0	3*
PRACTICALS								
8.	60 TT 4P1	Yarn Manufacturing Technology Laboratory II	PC	4	0	0	4	2
9.	60 TT 4P2	Fabric Manufacturing Technology Laboratory	PC	4	0	0	4	2
10.	60 CG 0P3	Career Skill Development III	CG	2	0	0	2	1*
11.	60 CG 0P6	Internship	CG	-	-	-	-	1/2/3*
				34	**21**	**01**	**12**	**23**

- Tamils and Technology[&] additional1 credit is offered and not account for CGPA.
- UHV[#] additional 3 credit is offered and not accouted for CGPA

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SEMESTER V

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	60 TT 501	Knitting Technology	PC	4	2	0	2	3
2.	60 TT 502	Textile Chemical Processing II	PC	3	3	0	0	3
3.	60 TT 503	Woven Fabric Structure	PC	3	3	0	0	3
4.	60 TT 504	Technical Textiles I	PC	3	3	0	0	3
5.	60 TT E2*	Professional Elective II	PE	3	3	0	0	3
6.	60 OE L0**	Open Elective II	OE	3	3	0	0	3
7.	60 MY 003	Startups and Entrepreneurship	MC	2	2	0	0	2*
PRACTICALS								
8.	60 TT 5P1	Textile Chemical Processing Laboratory	PC	3	0	0	3	1.5
9.	60 TT 5P2	Fabric Structure Laboratory	PC	3	0	0	3	1.5
10.	60 TT 5P3	Design Thinking and Innovation Laboratory	PC	2	0	0	2	1
11.	60 CG 0P4	Career Skill Development IV	CG	2	0	0	2	1*
12.	60 CG 0P6	Internship	CG	-	-	-	-	1/2/3*
				31	**19**	**0**	**12**	**22**

SEMESTER VI

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	60 HS 003	Total Quality Management	HS	3	3	0	0	3
2.	60 TT 601	Textile and Apparel Quality Evaluation	PC	3	3	0	0	3
3.	60 TT 602	Garment Manufacturing Technology I	PC	3	3	0	0	3
4.	60 TT 603	Technical Textiles II	PC	4	2	0	2	3
5.	60 TT E3*	Professional Elective III	PE	3	3	0	0	3
6.	60 OE L0**	Open Elective III	OE	3	3	0	0	3
PRACTICALS								
7.	60 TT 6P1	Garment Construction Laboratory I	PC	3	0	0	3	1.5
8.	60 TT 6P2	Textile and Apparel Quality Evaluation Laboratory	PC	3	0	0	3	1.5
9.	60 TT 6P3	Design Thinking and Product Development Laboratory	PC	2	0	0	2	1
10.	60 CG 0P5	Comprehension Test	CG	2	0	0	2	1*
11.	60 CG 0P6	Internship	CG	-	-	-	-	1/2/3*
				29	**17**	**0**	**12**	**22**

Comprehension Test* - one additional credit is offered and not accounted for CGPA calculation.
Miniproject& - 1 additional credit is offered and not accounted for CGPA calculation

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SEMESTER VII

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	60 TT 701	Garment Manufacturing Technology II	PC	3	3	0	0	3
2.	60 TT 702	Financial Strategies in Textile and Apparel Industry	PC	5	3	1	0	4
3.	60 TT 703	Nonwoven Technology	PC	4	2	0	2	3
4.	60 TT E4*	Professional Elective IV	PE	3	3	0	0	3
5.	60 TT E5*	Professional Elective V	PE	3	3	0	0	3
6.	60 AC 001	Research Skill Development	AC	1	1	0	0	0
7.	60 AB 00*	NCC/NSS/NSO/YRC/RRC/Fine Arts*	AB	3	2	0	2	3*
PRACTICALS								
8.	60 TT 7P1	Textile CAD Laboratory	PC	4	0	0	4	2
9.	60 TT 7P2	Garment Construction Laboratory II	PC	4	0	0	4	2
10.	60 TT 7P3	Project Work Phase I	CG	4	0	0	4	2
11.	60 CG 0P6	Internship	CG	-	-	-	-	1/2/3*
				34	**17**	**1**	**16**	**22**

NCC% - Course can be waived with 3 credits in VII semester or offered as extra 3 credits.
NSS/NSO/YRC/RRC/Fine Arts% 3 extra credits not accounted for CGPA

Internship* additional credits is offered based on the duration

SEMESTER VIII

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
PRACTICALS								
1.	60 TT 8P1	Project Work Phase II	CG	16	0	0	16	8
2.	60 CG 0P6	Internship	CG	-	-	-	-	1/2/3*
				17	**1**	**0**	**16**	**8**

TOTAL NUMBER OF CREDITS TO BE EARNED FOR AWARD OF THE DEGREE = 162

Note: HS- Humanities and Social Sciences including Management Courses, BS- Basic Science Courses, ES-Engineering Science Courses, PE-Professional Core Courses, PE-Professional Elective Courses, GE- General Elective Courses, OE- Open Elective Courses, CG - Career guidance Course, MC- Mandatory Courses AC-Audit courses

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COURSES OF STUDY
(For the candidates admitted in 2023-2024)

SEMESTER I

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
		Induction Programme	-	-	-	-	-	-
THEORY								
1.	60 EN 001	Professional English I	HS	3	1	0	2	2
2.	60 MA 001	Matrices and Calculus	BS	5	3	1	0	4
3.	60 PH 007	Physics for Textile Technology	BS	3	3	0	0	3
4.	60 CH 006	Chemistry for Textile	BS	3	3	0	0	3
5.	60 ME 001	Engineering Drawing	ES	6	2	0	4	4
6.	60 MY 001	Environmental Studies and climate Change	MC	2	2	0	0	0
7.	60 GE 001	Heritage of Tamils / □□□□□□ □□□□	GE	1	1	0	0	1*
PRACTICALS								
8.	60 CP 0P3	Applied Physics and Chemistry Laboratory	BS	4	0	0	4	2
9.	60 ME 0P1	Fabrication and Reverse Engineering Laboratory	ES	4	0	0	4	2
			Total	**31**	**15**	**1**	**14**	**20**

BS : Basic Science
HS : Humanities and Social Science
ES : Engineering Science
MC : Mandatory Course
L : Lecture
T : Tutorial
P : Practical

Note:

- 1 Hour Lecture is equivalent to 1 credit
- 1 Hour Tutorial is equivalent to 1 credit
- 2 Hours Practical is equivalent to 1 credit

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B.E. / B.Tech. Degree Programme

SCHEME OF EXAMINATIONS

(For the candidates admitted in 2023-2024)

FIRST SEMESTER

S. No.	Course Code	Name of the Course	Duration of Internal Exam	Weightage of Marks			Minimum Marks for Pass in End Semester Exam	
				Continuous Assessment*	End Semester Exam **	Max. Marks	End Semester Exam	Total
THEORY								
1.	60 EN 001	Professional English I	2	40	60	100	45	100
2.	60 MA 001	Matrices and Calculus	2	40	60	100	45	100
3.	60 PH 007	Physics for Textile Technology	2	40	60	100	45	100
4.	60 CH 006	Chemistry for Textile	2	40	60	100	45	100
5.	60 ME 001	Engineering Drawing	2	40	60	100	45	100
6.	60 MY 001	Environmental Studies and climate Change	2	100	-	100	-	100
7.	60 GE 001	Heritage of Tamils / □□□□□□ □□□□	2	100	-	100	-	100
PRACTICAL								
8.	60 CP 0P3	Applied Physics and Chemistry Laboratory	3	60	40	100	45	100
9.	60 ME 0P1	Fabrication and Reverse Engineering 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.

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60 EN 001	PROFESSIONAL ENGLISH I	Category	L	T	P	Credit
		HS	1	0	2	2

Objectives

- To help learners improve their vocabulary and to enable them to use words appropriately in different academic and professional contexts
- To help learners develop strategies that could be adopted while reading texts
- To help learners acquire the ability to speak effectively in English in real life and career related situations
- To equip students with effective speaking and listening skills in English
- To facilitate learners to enhance their writing skills with coherence and appropriate format effectively

Pre-requisites

- Basic knowledge of reading and writing in English.

Course Outcomes

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

CO1	Compare and interpret complex academic texts	Understand
CO2	Recall the denotative and connotative meanings of technical texts	Remember
CO3	Interpret definitions, descriptions, narrations, and essays on various topics	Understand
CO4	Express fluently and accurately in formal and informal communicative contexts	Understand
CO5	Summarize their opinions effectively in both oral and written medium of communication	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	-	-	-	-	-	-	-	2	3	3	2	3	2	2	3
CO2	-	-	-	-	-	-	-	2	3	3	2	3	2	2	3
CO3	-	-	-	-	-	-	-	2	3	3	2	3	2	2	3
CO4	-	-	-	-	-	-	-	2	3	3	2	3	2	2	3
CO5	-	-	-	-	-	-	-	2	3	3	2	3	2	2	3
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	1	2		
Remember	10	10	10	20
Understand	50	50	80	80
Apply	-	-	-	-
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-
Total	60	60	100	100

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. Textile Technology								
60 EN 001 - Professional English I								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I	1	0	2	45	2	40	60	100

Introduction to Fundamentals of Communication **Listening:** General information-specific details-conversation: introduction to classmates – audio / video (formal & informal). **Speaking:** Self Introduction; Introducing a friend; conversation - politeness strategies. **Reading:** Reading brochures (technical context), telephone messages / social media messages relevant to technical contexts and emails. **Writing:** Writing letters – informal and formal – basics and format orientation **Language Focus:** Present Tenses; word formation (affixes); synonyms, antonyms and contranyms, and phrasal verbs; abbreviations & acronyms (as used in technical contexts).	[9]
Narration and Summation **Listening:** Podcast, anecdotes / stories / event narration; documentaries and interviews with celebrities. **Speaking:** Narrating personal experiences / events; Interviewing a celebrity; reporting / and summarizing of documentaries / podcasts/ interviews. **Reading:** Biographies, travelogues, newspaper reports, excerpts from literature, and travel & technical blogs. **Writing:** Paragraph writing, short report on an event (field trip etc.). **Language Focus:** Past tenses and prepositions; One-word substitution.	[9]
Description of a process / product **Listening:** Listen to a product and process descriptions; advertisements about products or services **Speaking:** Picture description; giving instruction to use the product; presenting a product. **Reading:** Advertisements, gadget reviews and user manuals. **Writing:** Definitions; instructions; and product /process description. **Language Focus:** Imperatives; comparative adjectives; future tenses. Homonyms; and Homophones, discourse markers (connectives & sequence words)	[9]
Classification and Recommendations **Listening:** TED Talks; scientific lectures; and educational videos. **Speaking:** Small Talk; Mini presentations **Reading:** Newspaper articles and Journal reports Note-making / Note-taking; recommendations; Transferring information from non-verbal (chart, graph etc, to verbal mode) **Language Focus:** Articles; Pronouns -Possessive & Relative pronouns; subject-verb agreement; collocations.	[9]
Expression **Listening:** Debates/ discussions; different viewpoints on an issue; and panel discussions. **Speaking:** Group discussions, debates & role plays. **Reading:** Editorials; and opinion blogs. **Writing:** Essay Writing (Descriptive or narrative). **Language Focus:** Punctuation; Compound Nouns; simple, compound & complex sentences. cause & effect expressions.	[9]
Total Hours:	**45**

Text Book(s):	
1.	*'English for Engineers & Technologists'* Orient Blackswan Private Ltd. Department of English, Anna University, 2020
2.	Norman Lewis, *'Word Power Made Easy - The Complete Handbook for Building a Superior Vocabulary Book'*, Penguin Random House India, 2020
Reference(s):	
1.	Paul Emmerson and Nick Hamilton, *'Five Minute Activities for Business English',* Cambridge University Press, New York, 2005

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2.	Arthur Brookes and Peter Grundy,' *Beginning to Write: Writing Activities for Elementary and Intermediate Learners',* Cambridge University Press, New York, 2003
3.	Michael McCarthy and Felicity O Dell, *'English Vocabulary in Use: Upper Intermediate',* Cambridge University Press, N.York, 2012
4.	Lakshmi Narayanan, *'A Course Book on Technical English'* Scitech Publications (India) Pvt. Ltd. 2020

*SDG 4 Quality Education

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Introduction to Fundamentals of Communication**	
1.1	Listening for general information and Specific details	1
1.2	Self-introduction	1
1.3	Narrating personal experiences	1
1.4	Reading relevant to technical contexts and emails	1
1.5	Writing letters – informal	1
1.6	Writing letters - formal	1
1.7	Present Tenses	1
1.8	synonyms, antonyms and contranyms, and affixes	1
1.9	phrasal verbs; abbreviations & acronyms	1
2.0	**Narration and Summation**	
2.1	Listening to podcasts, documentaries and interviews with celebrities	1
2.2	Narrating personal experiences	1
2.3	Summarizing of documentaries	1
2.4	Reading travelogues, and excerpts from literature	1
2.5	Paragraph writing	1
2.6	Short report on an event (field trip etc.).	1
2.7	Past tenses	1
2.8	Prepositions	1
2.9	One-word substitution	1
3.0	**Description of a process / product**	
3.1	Listen to a product and process descriptions	1
3.2	Picture description	1
3.3	Giving instruction to use the product	1
3.4	Reading Advertisements, gadget reviews and user manuals	1
3.5	Writing Definitions and instructions	1
3.6	Future Tenses	1
3.7	Homonyms and Homophones	1
3.8	Imperatives	1
3.9	comparative adjectives, and discourse markers	1
4.0	**Classification and Recommendations**	
4.1	Listening to TED Talks and educational videos	1
4.2	Listening to scientific lectures	1
4.3	Small Talk and mini presentations	1
4.4	Reading newspaper articles and journal reports	1
4.5	Note-making / Note-taking	1
4.6	Recommendations	1
4.7	Transferring information from non-verbal	1
4.8	Articles and Pronouns	1
4.9	Subject-verb agreement and collocations	1
5.0	**Expression**	
5.1	Listening to debates and panel discussions	1
5.2	Group discussions	2

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5.3	Role plays	1
5.4	Reading editorials and opinion blogs	1
5.5	Essay Writing (Descriptive or narrative)	1
5.6	Punctuation and cause & effect expressions.	1
5.7	Compound Nouns	1
5.8	Simple, compound & complex sentences	1

Course Designer(s)

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

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60 MA 001	MATRICES AND CALCULUS	Category	L	T	P	Credit
		BS	3	1	0	4

Objectives

- To familiarize the students with basic concepts in Cayley-Hamilton theorem and orthogonal transformation.
- To get exposed to the fundamentals of differential calculus in various methods.
- To acquire skills to understand the concepts involved in Jacobians and maxima and minima.
- To solve various linear differential equations and method of variation of parameters.
- To learn various techniques and methods in solving definite and indefinite integrals.

Pre-requisites

Nil

Course Outcomes

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

CO1	Apply the concepts of Cayley-hamilton theorem and orthogonal transformation to the matrix	Apply
CO2	Apply the concepts of differentiation in solving various Engineering problems	Apply
CO3	Obtain Jacobians and maxima and minima of functions of two variables	Apply
CO4	Employ various methods in solving differential equations	Apply
CO5	Apply different techniques to evaluate definite and indefinite integrals	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO2	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO3	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO4	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO5	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	1	2		
Remember	10	10	10	10
Understand	10	10	20	20
Apply	40	40	70	70
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-
Total	60	60	100	100

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 MA 001 - Matrices and Calculus								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I	3	1	0	60	4	40	60	100

Matrices Characteristic equation - Eigen values and Eigen vectors of a real matrix - Properties of Eigen values and Eigen vectors - Cayley-Hamilton theorem - Orthogonal transformation of a symmetric matrix to diagonal form - Reduction of quadratic form to canonical form by an Orthogonal transformation - Nature of quadratic form - Applications: Stretching of an elastic membrane **Hands-on: Matrix Operations - Addition, Multiplication, Transpose, Inverse and Rank**	[9]
Differentiation Representation of functions - Limit of a function - Continuity - Derivatives - Differentiation rules (sum, product, quotient, chain rules) - Successive Differentiation - Leibnitz's theorem **- Applications: Maxima and Minima of functions of one variable*** **Hands-on:Determine the solution of system of linear equations**	[9]
Functions of Several Variables Partial differentiation - Homogeneous functions and Euler's theorem - Jacobians - Taylor's series for functions of two variables - **Applications: Maxima and minima of functions of two variables - Constrained maxima and minima: Lagrange's Method of Undetermined Multipliers*** **Hands-on: Compute the Eigen values and Eigen vectors of a Matrix**	[9]
Differential Equations Linear differential equations of second and higher order with constant coefficients - R.H.S is of the form $e^{\alpha x}$, $\sin \alpha x$, $\cos \alpha x$, x^n, $n > 0$ - Differential equations with variable coefficients: Cauchy's and Legendre's form of linear equations - Method of variation of parameters **Hands-on: Solve the first and second order ordinary differential equations**	[9]
Integration Definite and Indefinite integrals - Substitution rule - Techniques of Integration: Integration by parts, Integration of rational functions by partial fraction, Integration of irrational functions - Improper integrals - Applications: Hydrostatic force and pressure, moments and centres of mass **Hands-on:Compute the Maxima and Minima of a function of one variable**	[9]
Total Hours:	**45**

Text Book(s):	
1.	Grewal B.S, "Higher Engineering Mathematics", 44th Edition, Khanna Publishers, Delhi, 2017.
2.	Veerarajan T, "Engineering Mathematics", for Semesters I & II, 1st Edition, Tata McGraw Hill Publishing Co., New Delhi, 2019.
Reference(s):	
1.	Kreyszig Erwin, "Advanced Engineering Mathematics", 10th Edition, John Wiley and Sons (Asia) Limited,New Delhi, 2016.
2.	Kandasamy P, Thilagavathy K and Gunavathy K, "Engineering Mathematics - I", S.Chand & Company Ltd, New Delhi, 2017
3.	Bali N P and Manish Goyal," A text book of Engineering Mathematics",10th Edition, Laxmi Publications(P) Ltd, 2016.
4.	"Matrix Analysis with Applications" Dr Gupta S K and Dr Sanjeev Kumar and Prof. Somnath Roy "Matrix Solvers", NPTEL Online Video Courses.

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Matrices**	
1.1	Characteristic equation	1
1.2	Eigen values and Eigen vectors of a real matrix	1
1.3	Properties of Eigen values and Eigen vectors	1
1.4	Cayley-Hamilton theorem	1
1.5	Orthogonal transformation of a symmetric matrix to diagonal form	1
1.6	Nature of quadratic form	1
1.7	Reduction of quadratic form to canonical form by Orthogonal transformation	2
1.8	Stretching of an elastic membrane	1
1.9	Tutorial	2
1.10	Hands-on	1
2.0	**Differentiation**	
2.1	Representation of functions	1
2.2	Limit of a function and Continuity	1
2.3	Differentiation rules (sum, product, quotient, chain rules)	2
2.4	Successive differentiation	1
2.5	Leibnitz's theorem	2
2.6	Maxima and minima of functions of one variable	2
2.7	Tutorial	2
2.8	Hands-on	1
3.0	**Transmission Systems**	
3.1	Partial differentiation	1
3.2	Homogeneous functions and Euler's theorem	1
3.3	Jacobians	2
3.4	Taylor's series for functions of two variables	1
3.5	Maxima and minima of functions of two variables	2
3.6	Lagrange's Method of Undetermined Multipliers	2
3.7	Tutorial	2
3.8	Hands-on	1
4.0	**Differential Equations**	
4.1	Linear differential equations of second and higher order with constant co-efficient	1
4.2	R.H.S is of the form $e^{\alpha x},\ sin\,\alpha\,x,\ cos\,\alpha\,x,\ x^n, n > 0$	2
4.3	Differential equations with variable coefficients: Cauchy's form of linear equations	2
4.4	Differential equations with variable coefficients: Legendre's form of linear equations	2
4.5	Method of variation of parameters	2
4.6	Tutorial	2
4.7	Hands-on	1
5.0	**Integration**	
5.1	Definite and Indefinite integrals	2
5.2	Substitution rule	1
5.3	Techniques of Integration: Integration by parts	1

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5.4	Integration of rational functions by partial fraction	1
5.5	Integration of irrational functions	1
5.6	Improper integrals	1
5.7	Hydrostatic force.	1
5.8	Pressure, moments and centres of mass.	1
5.9	Tutorial	2
5.10	Hands-on	1

Course Designer(s)

1. Dr.C.Chandran - cchandran@ksrct.ac.in
2. Mr.G.Mohan - mohang@ksrct.ac.in

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60 PH 007	PHYSICS FOR TEXTILE TECHNOLOGY (B.Tech. TXT)	Category	L	T	P	Credit
		BS	3	0	0	3

Objectives

- To inculcate the principles of laser, types of laser and demonstrate the applications of laser
- To study the basic concept of ultrasonic waves, production of ultrasonic waves and its applications
- To state the principle of optical fiber and to understand the design and applications of optical fibers.
- To familiarize the students to understand the concept of elasticity, surface tension, viscosity and its applications
- To instil the fundamental concepts of crystallography and nanotechnology for engineering applications

Pre-requisites

- Nil

Course Outcomes

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

CO1	Recognize the different types of lasers and its applications	Remember
CO2	Realize the principle, production, properties and applications of ultrasonic waves	Apply
CO3	Acquire the fundamentals of fiber optic and apply to textile technology	Understand
CO4	Recognize the properties of materials for its potential applications in industrial applications	Understand
CO5	Infer the basics of crystal physics and nanomaterials for their applications in textile engineering	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	-	-	-	2	-	2	-	-	2	-	-
CO2	3	-	-	-	-	-	-	2	-	2	-	-	2	-	-
CO3	3	-	-	-	-	-	-	2	-	2	-	-	2	-	-
CO4	3	-	-	-	-	-	-	2	-	2	-	-	2	-	-
CO5	3	-	-	-	-	-	-	2	-	2	-	-	2	-	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	1	2		
Remember	10	14	30	30
Understand	46	46	50	50
Apply	04	-	20	20
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-
Total	60	60	100	100

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 PH 007- Physics for Textile Technology								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I	3	0	0	45	3	40	60	100

***LASERS** Einstein's theory of matter radiation interaction and A and B coefficients; amplification of light by population inversion- different types of lasers: gas lasers (CO_2), solid-state lasers (Nd: YAG), dye lasers, Semiconductor laser (Homojunction and Hetero junction)- Properties of laser beams- Application of laser in engineering and garment manufacturing.	[9]
***ULTRASONICS AND APPLICATIONS** Introduction-Properties-Production: Magnetostriction effect, Magnetostriction generator-piezoelectric effect, piezoelectric generator – Ultrasonic detection- acoustical grating- Applications: Cavitation, cleaning, Textile Wet Processing, Non destructive testing: Pulse echo system, through transmission, resonance system- Ultrasonic imaging (A, B and TM-Scan).	[9]
***FIBER OPTICS AND SENSORS** Principles – cone of acceptance, numerical aperture (derivation)- Modes of propagation – Fabrication of optical fibre: Crucible-crucible technique - Classification: based on materials, modes and refractive index profile– Splicing : types of splicing- Fiber optical communication links (Block diagram) – Fiber optic sensors: liquid level sensors, Temperature and Displacement sensors- applications of fiber optic sensor in textile technology.	[9]
***ELASTICITY, SURFACE TENSION AND VISCOSITY** Stress - Strain - Hooke's law - Elastic Behavior of Material - Types of elastic moduli - Young's modulus - Bulk modulus - Rigidity modulus - Non-uniform bending - Uniform bending - factors affecting elasticity. Surface properties: cohesive force - adhesive force - factors affecting surface tension - interfacial tension - emulsions - detergency - foaming – wettability- coefficient of viscosity – Poiseuille's law - coefficient of viscosity of various liquids. Properties of absorbent textiles for industrial applications.	[9]
***CRYSTALLOGRAPHY AND NANOTECHNOLOGY** Lattice - Unit cell – crystal systems and Bravais lattice - Crystal planes and Miller indices - Nanomaterials: Properties- Top-down process: Ball Milling method – Bottom-up process: vapor phase deposition – Carbon Nano Tube (CNT): Properties, preparation by electric arc method, Applications of carbon nano tubes in textile processing: Water repellence, UV protection, Antimicrobial, Antistatic, Wrinkle resistance, Flame resistance	[9]
Total Hours:	**45**

Text Book(s):	
1.	M. N. Avadhanulu, P. G. Kshirsagar, TVS Arun Murthy "A Text Book of Engineering Physics", S Chand Publications, New Delhi, 2022.
2.	H. K. Malik, A. K. Singh "Engineering Physics" McGraw Hill Education
	D. R. Joshi "Engineering Physics" McGraw Hill Education Private Limited, New Delhi. 2010
Reference(s):	
1.	S.O. Pillai "A Textbook Of Engineering Physics" New Age International (P) Limited, New Delhi, 2014
2.	B. B. Laud " Lasers and Non-Linear Optics" New Age International Publications, New Delhi, 2015.
3.	Palanisamy, P.K., "Physics of Materials", Scitech Publications, Chennai. 2012

* SDG:4- Quality Education

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**LASERS**	
1.1	Einstein's theory of matter radiation interaction and A and B coefficients	2
1.2	Amplification of light by population inversion	1
1.3	Different types of lasers: gas lasers (CO_2)	1
1.4	Solid-state lasers (Nd: YAG)	1
1.5	Dye lasers	1
1.6	Semiconductor laser (Homojunction and Hetero junction)-	1
1.7	Properties of laser beams	1
1.8	Application of laser in engineering and garment manufacturing	1
2.0	**ULTRASONICS AND APPLICATIONS**	
2.1	Introduction-Properties	1
2.2	Production: Magnetostriction effect, Magnetostriction generator	1
2.3	piezoelectric effect, piezoelectric generator	1
2.4	Ultrasonic detection	1
2.5	Acoustical grating	1
2.6	Applications: Cavitation, cleaning, Textile Wet Processing	1
2.7	Non destructive testing: Pulse echo system, through transmission, resonance system	2
2.8	Ultrasonic imaging (A, B and TM- Scan).	1
3.0	**FIBER OPTICS AND SENSORS**	
3.1	Principles – cone of acceptance,	1
3.2	Numerical aperture (derivation)- Modes of propagation	1
3.3	Fabrication of optical fibre: Crucible-crucible technique	1
3.4	Classification: based on materials, modes and refractive index profile	1
3.5	Splicing : types of splicing	1
3.6	Fiber optical communication links (Block diagram)	1
3.7	Fiber optic sensors: liquid level sensors, Temperature	1
3.8	Displacement sensors	1
3.9	Applications of fiber optic sensor in textile technology	1
4.0	**ELASTICITY, SURFACE TENSION AND VISCOSITY**	
4.1	Stress - Strain - Hooke's law	1
4.2	Elastic Behavior of Material	1
4.3	Types of elastic moduli - Young's modulus - Bulk modulus - Rigidity modulus -	1
4.4	Non-uniform bending - Uniform bending - factors affecting elasticity.	1
4.5	Surface properties: cohesive & adhesive forces - factors affecting surface tension	1
4.6	Interfacial tension - emulsions - detergency - foaming – wettability-	1
4.7	Coefficient of viscosity – Poiseuilles law	1
4.8	Coefficient of viscosity of various liquids.	1
4.9	Properties of absorbent textiles for industrial applications.	1
5.0	**CRYSTALLOGRAPHY AND NANOTECHNOLOGY**	
5.1	Lattice - Unit cell – crystal systems and Bravais lattice	1
5.2	Crystal planes and Miller indices	1

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5.3	Nanomaterials: Properties- Top-down process: Ball Milling method	1
5.4	Bottom-up process: vapor phase deposition	2
5.5	Carbon Nano Tube (CNT): Properties, preparation by electric arc method,	1
5.6	Applications of carbon nano tubes in textile processing:	1
5.7	Water repellence, UV protection, Antimicrobial, Antistatic, Wrinkle resistance, Flame resistance	2

Course Designer(s)

1. Dr. V. Vasudevan - vasudevanv@ksrct.ac.in
2. Mr. S. Vanchinathan - vanchinathan@ksrct.ac.in
3. Dr. P. Suthanthira Kumar - suthanthirakumar@ksrct.ac.in

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60 CH 006	CHEMISTRY FOR TEXTILE	Category	L	T	P	Credit
		BS	3	0	0	3

Objectives

- To help the learners to analyse the hardness of water and its removal
- To study the concepts of electrochemistry and corrosion control.
- To study the properties of lubricants and emulsions
- To explain the concepts of kinetics and surface chemistry
- To identify the type of polymer fabrication

Pre-requisites

- Nil

Course Outcomes

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

CO1	Identify the types of hardness of water and its removal.	Apply
CO2	Interpret the applications of electrochemistry, corrosion and its control	Apply
CO3	Identify the types of lubricants and their practical applications	Understand
CO4	Interpret the kinetics of the reaction and surface chemistry	Understand
CO5	Explore the types of polymer fabrication.	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	-	3	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	-	2	-
CO4	2	2	-	-	-	-	-	-	-	-	-	-	-	2	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 CH 006 - Chemistry for Textile								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I	3	0	0	45	3	40	60	100

Water Technology Introduction – Commercial and industrial uses of water - hardness - types – estimation of hardness by EDTA method- Internal conditioning (colloidal, phosphate, calgon and carbonate conditioning methods) – external conditioning (Zeolite process, demineralization process) - Desalination methods (Reverse Osmosis and Electro dialysis). Flash evaporation.	[9]
Electrochemistry and Corrosion Electrode potential - Nernst Equation - derivation and problems - reversible and irreversible cells - Types of Electrodes and its applications - reference electrodes - pH, conductometric and Potentiometric titrations. Electrochemical corrosion, Corrosion due to dissimilar metal cells (galvanic cells), Corrosion due to differential aeration - Factors influencing corrosion - Corrosion control: cathodic protection (sacrificial anodic protection, impressed current cathodic prot	[9]
Lubricants Functions - properties (viscosity index, oiliness, carbon residue, aniline point, cloud and pour point) - classification: Grease (calcium based, sodium based and lithium based) - solid lubricants (graphite and molybdenum disulphide). Grading of lubricants. Hydraulic oils – Lubricating Emulsions – Oil in water, Water in oil. Properties and applications - gas as a lubricant	[9]
Kinetics and Surface Chemistry Kinetics: Reaction rate - order and molecularity - factors influencing rate of reaction – first order kinetics – Arrhenius equation. Adsorption: Types of adsorption – adsorption isotherms – Freundlich's adsorption isotherm – Langmuir's adsorption isotherm – applications of adsorption on pollution abatement.	[9]
Fabrication of Polymer Compounding- Additives for polymer – fillers – plasticizers – lubricants – accelerators – stabilizers - flame retarders – pigments - nucleating agents - blowing agents - adhesives. Fabrication of polymer - injection moulding - extrusion moulding - blow moulding – compression moulding - lamination.	[9]
Total Hours:	**45**

Text Book(s):	
1.	O.G. Palanna "Engineering Chemistry" Tata McGraw-Hill Pub.Co.Ltd, New Delhi, 2017.
2.	P.C. Jain and Monica Jain, A Textbook of Engineering Chemistry, DhanpatRai publications, New Delhi, 16th edition, 2015.
Reference(s):	
1.	Jain. P.C. and Monica Jain, "Engineering Chemistry", Dhanpatrai publishing co. New Delhi, 14th edition, 2015.
2.	Dara. S.S, "A Text Book of Engineering Chemistry", S Chand & co. Ltd., 2014.
3.	O.V. Roussak and H.D. Gesser, Applied Chemistry-A Text Book for Engineers and Technologists, Springer Science Business Media, New York, 2nd Edition, 2013
4.	ShikhaAgarwal, "Engineering Chemistry-Fundamentals and Applications", Cambridge University Press, Delhi, 2nd Edition, 2019.
5	Shaw D.J., Introduction to Colloid and Surface Chemistry, Butterworth-heinemann publishers, 1992.

* SDG 6: Improve Clean Water and Sanitation
** SDG 9: Industry, Innovation, and Infrastructure
*** SDG 15 :Life on Land

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Water Technology**	
1.1	Introduction – Commercial and Industrial uses of water	2
1.2	Hardness – types	1
1.3	Estimation of Hardness of ater by EDTA method	1
1.4	Internal conditioning (Colloidal, Phosphate, Calgon and Carbonate)	1
1.5	External conditioning (Zoelite process & Demineralization process)	2
1.6	Desalination methods (Reverse Osmosis and Electrodialysis)	1
1.7	Flash Evaporation	1
2.0	**Electrochemistry and Corrosion**	
2.1	Electrode potential - Nernst Equation - derivation and problems	1
2.2	Reversible and irreversible cells	1
2.3	Types of Electrodes and its applications	1
2.4	Reference electrodes – pH	1
2.5	Conductometric and Potentiometric titrations	1
2.6	Electrochemical corrosion, Corrosion due to dissimilar metal cells (galvanic cells),	1
2.7	Corrosion due to differential aeration - Factors influencing corrosion	1
2.8	Corrosion control: cathodic protection (sacrificial anodic protection, impressed current cathodic protection).	2
3.0	**Lubricants**	
3.1	Functions - properties (viscosity index, oiliness, carbon residue, aniline point, cloud and pour point)	2
3.2	classification: Grease (calcium based, sodium based and lithium based)	1
3.3	solid lubricants (graphite and molybdenum disulphide).	2
3.4	Grading of lubricants.	1
3.5	Hydraulic oils	1
3.6	Lubricating Emulsions	1
3.7	Oil in water, Water in oil.	1
3.8	Properties and applications - gas as a lubricant.	
4.0	**Kinetics and Surface Chemistry**	
4.1	Kinetics: Reaction rate - order and molecularity	2
4.2	factors influencing rate of reaction	1
4.3	first order kinetics	1
4.4	Arrhenius equation.	1
4.5	Adsorption: Types of adsorption –	1
4.6	adsorption isotherms – Freundlich's adsorption isotherm	1
4.7	Langmuir's adsorption isotherm –.	1
4.8	applications of adsorption on pollution abatement	1
5.0	**Fabrication of Polymer**	
5.1	Compounding- Additives for polymer	1
5.2	Fillers – plasticizers	1
5.3	Lubricants – accelerators	1
5.4	Stabilizers - flame retarders	1
5.5	Pigments - nucleating agents	1

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5.6	Blowing agents – adhesives	1
5.7	Fabrication of polymer - injection moulding	1
5.8	Extrusion moulding - blow moulding	1
5.9	Compression moulding - lamination.	1

Course Designer(s)

1. Dr.T.A.Sukantha - sukantha@ksrct. ac.in
2. Dr.K.Prabha - prabhak@ksrct.ac.in
3. Dr.S.Meenachi - meenachi@ksrct.ac.in

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60 ME 001	ENGINEERING DRAWING	Category	L	T	P	Credit
		ES	2	0	4	4

Objectives

- To convey to acquire various concepts of dimensioning, conventions and standards.
- To impart the graphic skills for converting pictorial views of solids in to orthographic views.
- To learn the concept in projection of solids.
- To draws the section of solids and to know development of different types of surfaces.
- To learn the concept in isometric projection

Pre-requisites

Nil

Course Outcomes

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

CO1	Use the drafting instruments for construct the conic sections	Apply
CO2	Convert the pictorial views of solids in to orthographic views	Apply
CO3	Draw the projections of regular solids	Apply
CO4	Draw the true shape of sections and develop the lateral surfaces of right solids.	Apply
CO5	Sketch the three-dimensional view of solids for given orthographic views and 2D drawing using drafting software.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	3	-	-	-	-		-	-	-	-	3	3	-
CO2	3	3	3	-	-	-	-		-	-	-	-	3	3	-
CO3	3	3	3	-	3	-	-	3	-	-	-	-	3	3	-
CO4	3	3	3	-	3	-	-	3	-	-	-	-	3	3	-
CO5	3	3	3	-	-	-	-		-	-	-	-	3	3	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

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

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 ME 001 - Engineering Drawing								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I	2	0	4	90	4	40	60	100

Introduction to Engineering Drawing and Plane Curves* Use of drawing instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning – Drawing sheet layouts - Title block – Line types – Scales: plain, diagonal and vernier scales. Construction of ellipse, parabola and hyperbola (Eccentricity method) - Construction of rectangular hyperbola - Construction of cycloids, epicycloids and hypocycloids	[6+12]
Orthographic Projection* Introduction to orthographic projections – Planes of projection – Projection of points and lines inclined to both planes – Projection of planes (Inclined to one plane and parallel to other – Inclined to both planes) - Conversions of pictorial views to orthographic views.	[6+12]
Projection of Solids* Projections of simple solids: prism, pyramid, cylinder and cone (Axis of solid inclined to both HP and VP).	[6+12]
Sections of solids and Development of surfaces* Sections of solids :Prism, Cylinder, Pyramid, Cone – Auxiliary Views - Draw the sectional orthographic views of geometrical solids, objects from industry - Development of surfaces of Right solids – Prism, Pyramid, Cylinder and Cone	[6+12]
Isometric Projection and Introduction to AutoCA* Principles of isometric projection – Isometric scale – Isometric projections of simple solids: Prism, pyramid, cylinder and cone - Isometric projections of frustum and truncated solids - Combination of two solid objects in simple vertical positions.	[6+12]
Total Hours:	**90**

Text Book(s):	
1.	Bhatt N.D., Engineering Drawing‖, Charotar Publishing House Pvt. Ltd., 53rd Edition, Gujarat, 2019
Reference(s):	
1.	Shah M.B., Rana B.C., and V.K.Jadon., Engineering Drawing‖, Pearson Education, 2011.
2.	Natarajan K.V., A Text Book of Engineering Graphics‖, Dhanalakshmi Publishers, Chennai, 2014.
3.	Venugopal K., "Engineering Graphics", New Age International (P) Limited, 2014.
4.	Dhawan, R.K., "A Text Book of Engineering Drawing" 3 rd Revised Edition, S. Chand Publishing, New Delhi, 2012

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

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1	**Introduction to Engineering Drawing and Plane Curves**	
1.1	Use of drawing instruments	1
1.2	BIS conventions and specifications – Size, layout and folding of drawing sheets	2
1.3	Lettering and dimensioning -Drawing sheet layouts - Title block - Line types	3
1.4	Scales: plain, diagonal and vernier scales.	3
1.5	Construction of ellipse	2
1.6	Construction of parabola	2
1.7	Construction hyperbola by eccentricity method	1
1.8	Practice class for ellipse, parabola and hyberbola	2
1.9	Construction of rectangular hyperbola	2
1.10	Construction of cycloids	2
1.11	Construction of epicycloids and hypocycloids.	2
1.12	Practice class for cycloids and hypocycloids.	1
2	**Orthographic Projection**	
2.1	Introduction to orthographic projections	2
2.2	Planes of projection,	2
2.3	Projection of points	2
2.4	Projection of lines inclined to both planes.	2
2.5	Projection of planes	2
2.6	Projection of planes Inclined to both planes	1
2.7	Conversions of pictorial views to orthographic views.	3
2.8	Practice class for pictorial views to orthographic views.	2
3	**Projection of Solids**	
3.1	Projections of simple solids: prism	2
3.2	Projections of simple solids: cylinder	3
3.3	Projections of simple solids: pyramid	2
3.4	Projections of simple solids: Cone	2
3.5	Practice class for Projection of Solids	2
3.6	Axis of solid inclined to both HP and VP	5
4	**Sections of solids and Development of surfaces**	
4.1	Section of solids for Prism,	2
4.2	Section of solids for Cylinder,	2
4.3	Section of solids for Pyramid,	2
4.4	Section of solids for Cone	2
4.7	Auxiliary Views - Draw the sectional orthographic views of geometrical solids.	3
4.8	Draw the sectional orthographic views of objects from industry.	3
4.9	Development of surfaces of Right solids Prism,	2
4.10	Development of surfaces of Right solids Pyramid, Cylinder and Cone	2
5	**Isometric Projection and Introduction to AutoCAD**	
5.1	Principles of isometric projection	1
5.2	Isometric scale	2
5.3	Isometric projections of simple solids: Prism,	2

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5.4	Isometric projections of simple solids: Pyramid,	2
5.5	Isometric projections of simple solids: Cylinder	1
5.6	Isometric projections of simple solids: Cone	2
5.7	Isometric projections of frustum	2
5.8	Isometric projections of truncated solids	2
5.9	Combination of two solid objects in simple vertical positions.	3

Course Designer(s)

1. Dr.G.Venkatachalam - venkatachalam@ksrct.ac.in

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60 MY 001	Environmental Studies and Climate Change (Common to all)	Category	L	T	P	Credit
		MC	2	0	0	0

Objectives

- To understand the importance of ecosystem and biodiversity.
- To analyse the impacts of pollution, control and legislation.
- To enlighten awareness and recognize the social responsibility in environmental issues.
- To enlighten the waste management

Pre-requisites

- Nil

Course Outcomes

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

CO1	Understand the impacts of pollution on climate change	Understand
CO2	Enhance the awareness the methods of waste management	Apply
CO3	Examine the value of sustainable future	Analyse
CO4	Evaluate the clean and green development for environmental problem	Analyse
CO5	Analyse the role of Geo-science in environmental management	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2		-	-	2	3	-	-	-	-	2	-	-	-
CO2	3	2	2	2	2	3	3	2	-	-	-	2	-	-	-
CO3	3	2	3	2	2	3	3	2	-	-	-	2	-	-	-
CO4	3	2	1	2		2	2		-	-	-	2	-	-	-
CO5	3	2	2		3		2		-	-	-	2	-	-	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Model Examination (Marks)
	1	2	
Remember	20	10	10
Understand	20	10	20
Apply	20	10ta	30
Analyse	-	30	30
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Model Titles for Case Study

1. Environmental impacts of quarry industries in Melur Taluk.
2. A study on impacts of tanneries on ground water and soil quality in Bhavani, Erode district.
3. Effect of pharmaceutical industry on groundwater quality in Oikaraipatty village, AlagarKovil.
4. Solid waste and waste water management in KSR hostel.
5. Environmental effect of Kudankulam atomic power plant.
6. Case study on effect of Sterlite industry
7. Effect of textile wastes in Tiruppur and Karur District.
8. Segregation of waste and its recycling by Pallipalayam Municipality at Namakkal
9. Effect of fire work waste on atmosphere in Sivakasi region
10. Effect of noise pollution waste on atmosphere in Sivakasi region

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 MY 001 - Environmental Studies and Climate Change								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I	2	0	0	30	-	100	-	100

Pollution and its impact on climate change* Pollution: Sources and impacts of air pollution – green house effect- global warming- climate change - ozone layer depletion - acid rain. Carbon Footprint - Climate change on various sectors – Agriculture, forestry and ecosystem – climate change mitigation and adaptation. Action plan on climate change. IPCC, UNFCCC, Kyoto Protocol, Montreal Protocol on Climatic Changes. *Activity*: Study of carbon emission nearby place or industry.	[6]
Integrated Waste Management** Waste - Types and classification. Principles of waste management (5R approach) - Swachh Bharat Abhiyan – Commercial waste, plastic waste, domestic waste, e-waste and biomedical waste - risk management: Collection, segregation, treatment and disposal methods. Waste water treatment- ASP *Activity*: Analysis and design of waste management systems, prepare a model / project -wealth from waste	[6]
Sustainable development practices§ Sustainable development goals (SDGs) **–** Green computing- Carbon trading - Green building – Eco- friendly plastic – Alternate energy: Hydrogen – Bio-fuels – Solar energy – Wind – Hydroelectric power. Water scarcity- Watershed management, ground water recharge and rainwater harvesting. *Activity*: Select a topic and analyse the value of sustainable development.	[6]
Environment and Agriculture§§ Organic farming – bio-pesticides- composting, bio composting, vermi-composting, roof gardening and irrigation. Waste land reclamation. Climate resilient agriculture. Green auditing *Activity*: Prepare a green auditing report on energy, water etc.	[6]
Geo-science in natural resource management Data base software in environment information, Digital image processing applications in forecasting. GPS, Remote Sensing and Geographical Information System (GIS), World wide web (www), Environmental information system (ENVIS). *Activity*: Prepare the report using IT tool.	[6]
Total Hours:	**30**

Text Book(s):	
1.	Anubha Kaushik , C P Kaushik. Perspectives In Environmental Studies, New Age International publishers; Sixth edition (1 January 2018)
Reference(s):	
1.	G.Tyler Miller Environmental Science 14th Edition Cengage Publications, Delhi, 2013.
2.	Gilbert M.Masters and Wendell P. Ela, "Environmental Engineering And Science", Phi Learning Private Limited, 3rd Edition,2015.
3.	Erach Bharucha. Textbook of Environmental Studies for Undergraduate Courses, Universities Press, 2000

§§ SDG: 3 – Good Health and Well-being
**SDG: 4 – Clean Water and Sanitation
§SDG: 6 - Affordable and Clean Energy
*SDG: 13 – Climate Action

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Pollution and its impact on climate change**	
1.1	Pollution: Sources and impacts of air pollution – green house effect- Global warming- climate change - ozone layer depletion - acid rain	2
1.2	Climate change on various sectors: Agriculture, forestry and ecosystem. – climate change mitigation and adaptation	2
1.3	Action plan on climate change - IPCC, UNFCCC, Kyoto Protocol, Montreal Protocol on Climatic Changes	2
2.0	**Integrated Waste Management**	
2.1	Waste - Types and classification. Principles of waste management (5R approach) - Swachh Bharat Abhiyan	1
2.2	Commercial waste, plastic waste, domestic waste, e-waste and biomedical waste	1
2.3	Risk management: Collection, segregation, treatment and disposal methods.	1
2.4	Waste water treatment- ASP	1
3.0	**Sustainable development practices**	
3.1	Sustainable development goals (SDGs) **–** Green computing- Carbon trading - Green building – Eco- friendly plastic	2
3.2	Alternate energy: Hydrogen – Bio-fuels – Solar energy – Wind – Hydroelectric power	2
3.3	Water scarcity- Watershed management, ground water recharge and rainwater harvesting	2
4.0	**Environment and Agriculture**	
4.1	Organic farming – bio-pesticides	1
4.2	Composting, bio composting, vermi-composting	2
4.3	Roof gardening and irrigation	1
4.4	Waste land reclamation. Climate resilient agriculture, Green auditing	1
5.0	**Geo-science in natural resource management**	
5.1	Data base software in environment information, Digital image processing applications in forecasting	3
5.2	GPS, Remote Sensing and Geographical Information System (GIS)	3
5.3	World wide web (www), Environmental information system (ENVIS)	3

Course Designer(s)

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60 GE 001	Heritage of Tamils	Category	L	T	P	Credit
		GE	1	0	0	1*

Objectives

- To learn the extensive literature of classical Tamil.
- To review the fine arts heritage of Tamil culture.
- To realize the contribution of Tamils in Indian freedom struggle.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Recognize the extensive literature of Tamil and its classical nature.	Understand
CO2	Apprehend the heritage of sculpture, painting and musical instruments of ancient people.	Understand
CO3	Review on folk and martial arts of Tamil people.	Understand
CO4	Insightthinai concepts, trade and victory of Chozha dynasty.	Understand
CO5	Realize the contribution of Tamil in Indian freedom struggle, self-esteem movement and siddha medicine.	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	-	-	-	-	-	-	3	3	-	2	-	3	2	-	3
CO2	-	-	-	-	-	-	3	3	-	2	-	3	2	-	3
CO3	-	-	-	-	-	-	3	3	-	2	-	3	2	-	3
CO4	-	-	-	-	-	-	3	3	-	2	-	3	2	-	3
CO5	-	-	-	-	-	-	3	3	-	2	-	3	2	-	3
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)	End Sem Examination (Marks)
Remember	50	-
Understand	50	-
Apply	-	-
Analyse	-	-
Evaluate	-	-
Create	-	-
Total	100	-

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 GE 001 – Heritage of Tamils								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
I	1	0	0	15	1	40	60	100

Language and Literature* Language Families in India - Dravidian Languages – Tamil as a Classical Language - Classical Literature in Tamil – Secular Nature of Sangam Literature – Distributive Justice in Sangam Literature - Management Principles in Thirukural - Tamil Epics and Impact of Buddhism & Jainism in Tamil Land - Bakthi Literature Azhwars and Nayanmars - Forms of minor Poetry - Development of Modern literature in Tamil - Contribution of Bharathiyar and Bharathidhasan.	[3]
Heritage - Rock Art Paintings to Modern Art – Sculpture* Hero stone to modern sculpture - Bronze icons - Tribes and their handicrafts - Art of temple car making - - Massive Terracotta sculptures, Village deities, Thiruvalluvar Statue at Kanyakumari, Making of musical instruments - Mridhangam, Parai, Veenai, Yazh and Nadhaswaram - Role of Temples in Social and Economic Life of Tamils.	[3]
Folk and Martial Arts* Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leatherpuppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils.	[3]
Thinai Concept of Tamils* Flora and Fauna of Tamils & Aham and Puram Concept from Tholkappiyam and Sangam Literature - Aram Concept of Tamils - Education and Literacy during Sangam Age - Ancient Cities and Ports of Sangam Age - Export and Import during Sangam Age - Overseas Conquest of Cholas.	[3]
Contribution of Tamils to Indian National Movement and Indian Culture* Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India – Self-Respect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil Books.	[3]
Total Hours:	**15**
Text Book(s):	

1.	□□□□□□□□□□□ - □□□□□□□□□□□□□□□□□□□□. □□ . □□□□□□ (□□□□□□□□: □□□).
2.	□□□□□□□□□□□□□ – □□□□□□□□□. □□□□□□□□. (□□□□□□□□□□□□□□).
3.	□□□□□ – □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ (□□□□□□□□□□□□□□□□□□□□□).
4.	□□□□□□ - □□□□□□□□□□□□□□□□□ (□□□□□□□□□□□□□□□□□□□□□).
5.	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print).
6.	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
7.	Historical Heritage of the Tamils (Dr.S.V.Subaramanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8.	The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.
9.	Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation,Tamil Nadu)
10.	Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author).
11.	Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu).
12.	Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

***SDG:4- Quality Education**

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60 CP 0P3	APPLIED PHYSICS AND CHEMISTRY LABORATORY (FT & TEXT)	Category	L	T	P	Credit
		BS	0	0	4	2

Objectives

1. To infer the practical knowledge by applying the experimental methods to correlate with the Physics theory.
2. To demonstrate an ability to make physical measurements and understand the limits of precision in measurements
3. Test the knowledge of theoretical concepts and develop the experimental skills of the learners.
4. To facilitate data interpretation and expose the learners to various industrial and environmental applications
5. To enhance the students to handle the instruments.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Realize the concept of youngs modulus, rigidity modulus and dielectric constant of the given materials	Apply
CO2	Recognize the knowledge of properties of light using laser and ordinary light source	Apply
CO3	Apply the concepts of chemistry and develop analytical skills for applications in engineering.	Apply
CO4	Analyse the pH, electromotive force, conductance by using instrumental methods.	Apply
CO5	Apply the Freundlich's adsorption isotherm and Langmuir's adsorption isotherm using acetic acid on activated charcoal	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	-	-	-	-	2	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	2	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	2	-	-	-	-	3	-
CO4	3	-	-	-	-	-	-	-	2	-	-	-	-	2	-
CO5	3	-	-	-	-	-	-	-	2	-	-	-	-	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	Lab	Activity		
Remember	10	-	10	10
Understand	30	30	30	30
Apply	40	40	40	40
Analyse	20	30	20	20
Evaluate	-	-	-	-
Create	-	-	-	-
Total	100	100	100	100

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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								
B.Tech. – Textile Technology								
60 CP 0P3– Applied Physics and Chemistry Laboratory								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
I	0	0	4	60	2	60	40	100

List of Experiments:

PHYSICS LABORATORY

1. Determination of Young's modulus of a given material - Uniform bending
2. Determination of rigidity modulus of a wire -Torsional pendulum.
3. Determination of dielectric constant.
4. Determination of wavelength of mercury spectral lines – spectrometer grating
5. (a) Laser- Determination of the wave length of the laser using grating.
6. (b) Optical fibre -Determination of Numerical Aperture and acceptance angle.

* SDG: 4- Quality Education

CHEMISTRY LABORATORY

1. Estimation of hardness of water sample by complexometric method.
2. Estimation of HCl by pH meter.
3. Estimation of mixture of acids by conductivity meter.
4. Determination of ferrous ion by Potentiometric titration.
5. Adsorption of acetic acid by Charcoal.

Case studies/Activity report

1. Prepare a report on hardness of water samples in and around your area and suggest your idea for removal of hardness.
2. Apply the knowledge of pH determination for health drinks, beverages, soil, effluent and other biological samples and prepare a case study report

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

Lab Manual

1. "Engineering Physics Lab Manual", Department of Physics, KSRCT.
2. "Chemistry Lab Manual Volume I & II", Department of Chemistry, KSRCT.

Course Designer(s)

Physics

1. Dr. V. Vasudevan - vasudevanv@ksrct.ac.in
2. Mr. S. Vanchinathan - vanchinathan@ksrct.ac.in
3. Dr. P. Suthanthira Kumar - suthanthirakumar@ksrct.ac.in

Chemistry

1. Dr.T.A.Sukantha – sukantha@ksrct.ac.in
2. Dr.B.Srividhya - srividyab@ksrct.ac.in
3. Dr.S.Meenachi - meenachi@ksrct.ac.in

Passed in BoS Meeting held on 22/12/2022
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60 ME 0P1	Fabrication and Reverse Engineering Laboratory	Category	L	T	P	Credit
		ES	0	0	4	2

Objectives

- To acquire skills in operating hand tools and instruments.
- To provide hands-on training on Carpentry, Sheet metal, Fitting and Welding.
- To provide hands-on training on household wiring and electronic circuits.
- To offer real time activity on plumbing connections in domestic applications.
- To provide hands-on activities on dismantling, and assembling the Home Appliance, Center lathe operations, computer's internal components and peripherals.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Perform power tools operations.	Apply
CO2	Make a wooden model using carpentry Process	Apply
CO3	Make a model using sheet metal, filing and joining a MS Plate	Apply
CO4	Repair and Maintenances of water lines for home applications	Apply
CO5	Trouble shoots the electrical and electronic circuits, Electrical machines and realizes the reputation of house wiring, home Appliance, computer internal components and peripherals.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	3	-	-	2	2	-	3	-	-	3	-	3	3
CO2	3	2	3	-	-	2	2	-	3	-	-	3	-	3	3
CO3	3	2	3	-	-	2	2	-	3	-	-	3	-	3	3
CO4	3	2	3	-	-	2	2	-	3	-	-	3	-	3	3
CO5	3	2	3	-	-	2	2	-	3	-	-	3	-	3	3
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

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K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 ME 0P1 - Fabrication and Reverse Engineering Laboratory								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
I	0	0	4	60	2	60	40	100

List of Experiments:

Machine Shop Exercises

1. Facing and Turning Operations
2. Drilling Operations

Fitting Exercises

3. Filling Operations
4. Filling and Cutting Operations on MS Plates for Square joint

Carpentry Exercises

5. Planning Operations
6. Joining of Wooden piece by Dovetail Joint

Sheet Metal Exercises

7. Making of Sheet Metal of Rectangular Tray
8. Making of Sheet Metal t of Cone Shape & Scoop

Welding Exercises

9.Arc Welding of MS Plates by Lap joint, Butt joint & T-Joint

Plumbing Exercises

10. Assembly of GI pipes/PVC and Pipe Fitting
11. Cutting of Threads in GI pipes / PVC by thread Cutting Dies

Electrical Wiring Exercises

12. Wiring circuits for Filament lamps/CT using Single (One way) Switch
13. Wiring circuits for Filament lamps/CT using Stair Case (Two Way) Switch
14. Wiring Circuits for a Fluorescent lamp (Tube Light Circuit)

Electronics Exercises

15. Current limiting resistor calculation for light emitting diode (LED).
16. Forward bias & Reverse bias of a PN junction diode.

Computer Hardware Exercise

17. Identify computer peripherals and internal components.
18. Dismentle and assemble of desktop computer systems.

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

Course Designer(s)

1. Mr.S.Venkatesan – venkatesans@ksrct.ac.in

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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 2023-2024)

SEMESTER II

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	60 EN 002	Professional English II	HS	3	1	0	2	2
2.	60 MA 003	Integrals, Partial Differential Equations and Laplace Transform	BS	5	3	1	0	4
3.	60 EE 002	Basic Electrical, Electronics and Instrumentation	ES	3	3	0	0	3
4.	60 ME 004	Engineering Mechanics	ES	5	3	1	0	4
5.	60 CS 001	C Programming	ES	3	3	0	0	3
6.	60 TT 201	Fibre Science	PC	3	3	0	0	3
7.	60 GE 002	Tamils and Technology / தமிழரும் தொழில்நுட்பமும்	GE	1	1	0	0	1*
PRACTICALS								
8.	60 EE 0P2	Basic Electrical, Electronics and Instrumentation Laboratory	ES	4	0	0	4	2
9.	60 CS 0P1	C Programming Laboratory	ES	4	0	0	4	2
10.	60 CG 0P1	Career Skill Development I	CG	2	0	0	2	1*
			Total	**35**	**19**	**2**	**14**	**23**

BS : Basic Science
HS : Humanities and Social Science
ES : Engineering Science
MC : Mandatory Course
L : Lecture
T : Tutorial
P : Practical

Note:
1 Hour Lecture is equivalent to 1 credit
1 Hour Tutorial is equivalent to 1 credit
2 Hours Practical is equivalent to 1 credit

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K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215
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B.E. / B.Tech. Degree Programme

SCHEME OF EXAMINATIONS
(For the candidates admitted in 2023-2024)

SECOND SEMESTER

S.No.	Course Code	Name of the Course	Duration of Internal Exam	Weightage of Marks			Minimum Marks for Pass in End Semester Exam	
				Continuous Assessment *	End Semester Exam **	Max. Marks	End Semester Exam	Total
THEORY								
1	60 EN 002	Professional English II	2	40	60	100	45	100
2	60 MA 003	Integrals, Partial Differential Equations and Laplace Transform	2	40	60	100	45	100
3	60 EE 002	Basic Electrical, Electronics and Instrumentation	2	40	60	100	45	100
4	60 ME 004	Engineering Mechanics	2	40	60	100	45	100
5	60 CS 001	C Programming	2	40	60	100	45	100
6	60 TT 201	Fibre Science	2	40	60	100	45	100
8	60 GE 002	Tamils and Technology / தமிழரும் தொழில்நுட்பமும்	2	100	-	100	-	100
PRACTICAL								
9	60 EE 0P2	Basic Electrical, Electronics and Instrumentation Laboratory	3	60	40	100	45	100
10	60 CS 0P1	C Programming Laboratory	3	60	40	100	45	100
11	60 CG 0P1	Career Skill Development I	3	100	--	100	-	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.

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60 EN 002	PROFESSIONAL ENGLISH II	Category	L	T	P	Credit
		HS	1	0	2	2

Objectives

- To help learners improve their vocabulary and enable them to use words appropriately in different academic and professional contexts.
- To help learners develop strategies that could be adopted while reading texts.
- To help learners acquire the ability to speak and write effectively in English in real life and career related situations.
- Improve listening, observational skills, and problem-solving capabilities
- Develop message generating and delivery skills

Pre-requisites

- Basic knowledge of reading and writing in English and should have completed Professional English I.

Course Outcomes

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

CO1	Compare and contrast products and ideas in technical texts.	Understand
CO2	Illustrate cause and effects in events, industrial processes through technical texts	Understand
CO3	Infer problems in order to arrive at feasible solutions and communicate them orally and in the written format.	Understand
CO4	Relate events and the processes of technical and industrial nature.	Remember
CO5	Demonstrate their opinions in a planned and logical manner, and draft effective résumés in context of job search.	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	-	-	-	-	-	-	-	2	3	3	2	3	2	2	3
CO2	-	-	-	-	-	-	-	2	3	3	2	3	2	2	3
CO3	-	-	-	-	-	-	-	2	3	3	2	3	2	2	3
CO4	-	-	-	-	-	-	-	2	3	3	2	3	3	3	3
CO5	-	-	-	-	-	-	-	2	3	3	2	3	3	3	3
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	1	2		
Remember	10	10	20	20
Understand	50	50	80	80
Apply	-	-	-	-
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-
Total	**60**	**60**	**100**	**100**

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech – Textile Technology

60 EN 002 - Professional English II

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
II	1	0	2	45	2	40	60	100

Making Comparisons **Listening :** Evaluative Listening: Advertisements, Product Descriptions, - Audio / video; filling a graphic organiser (choosing a product or service by comparison) **Speaking :** Marketing a product, persuasive speech techniques. **Reading :** Reading advertisements, user manuals and brochures. **Writing :** Professional emails, Email etiquette - compare and contrast essay. **Language Focus:** mixed tenses, prepositional phrases, same words used in different contexts and discourse markers	[9]
Expressing Causal Relations in Speaking and Writing **Listening :** Listening to longer technical talks and completing– gap filling exercises. Listening technical information from podcasts – Listening to process/event descriptions to identify cause & effects. **Speaking :** Describing and discussing the reasons of accidents or disasters based on news reports. **Reading :** longer technical texts– cause and effect essays, and letters / emails of complaint, **Writing :** Writing responses to complaints **Language Focus:** Active Passive Voice transformations, Infinitive and Gerunds – Word Formation (Noun-Verb-Adj-Adv), Adverbs.	[9]
Problem Solving **Listening :** Listening to / watching movie scenes/ documentaries depicting a technical problem and suggesting solutions. **Speaking :** Group Discussion (based on case studies), - techniques and Strategies. **Reading :** Case Studies, excerpts from literary texts, news reports etc. **Writing :** Letter to the Editor, Checklists, Problem solution essay / Argumentative Essay **Language Focus:** Error correction; If conditional sentences - Compound Words, Sentence Completion.	[9]
Reporting of Events and Research **Listening :** Listening Comprehension based on new report and documentaries – **Speaking :** Interviewing, presenting oral reports, Mini presentations on select topics. **Reading :** Newspaper articles. **Writing :** Recommendations, Transcoding, Accident Report, Precis writing and Summarising, and Plagiarism **Language Focus:** Reported Speech – Modals - Conjunctions- use of Prepositions	[9]
The Ability to put Ideas or Information Coherently **Listening :** Listening to TED Talks, Presentations, Formal job interviews, (analysis of the interview performance). **Speaking :** Participating in role plays, virtual interviews, making presentations with visual aids **Reading :** excerpts of interview with professionals **Writing :** Job / Internship application – Cover letter & Rés **Language Focus:** Numerical Adjectives, question types: Wh/ Yes or No/ and Tags; Relative Clauses - Idioms.	[9]
Total Hours:	**45**

Text Book(s):	
1.	English for Engineers & Technologists' Orient Blackswan Private Ltd. Department of English, Anna University, 2020
2.	Norman Lewis, 'Word Power Made Easy - The Complete Handbook for Building a Superior Vocabulary Book', Penguin Random House India, 2020
Reference(s):	
1.	Raman. Meenakshi, Sharma. Sangeeta, 'Professional English'. Oxford university press. New Delhi. 2019
2.	Arthur Brookes and Peter Grundy,' Beginning to Write: Writing Activities for Elementary and Intermediate Learners', Cambridge University Press, New York, 2003

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3.	Prof. R.C. Sharma & Krishna Mohan, 'Business Correspondence and Report Writing', Tata McGraw Hill & Co. Ltd., New Delhi, 2001
4.	V.N. Arora and Laxmi Chandra, 'Improve Your Writing', Oxford University Press, New Delhi, 2001

*SDG 4 – Quality Education

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1	**Making Comparisons**	
1.1	Evaluative Listening	1
1.2	Product Descriptions and filling a graphic organiser	1
1.3	Marketing a product by using persuasive techniques	2
1.4	Reading advertisements, user manuals and brochures	1
1.5	Writing professional emails	1
1.6	Compare and contrast essay	1
1.7	mixed tenses and prepositional phrases	1
1.8	Same words used in different contexts	1
2	**Expressing Causal Relations in Speaking and Writing**	
2.1	Listening to longer technical talks	1
2.2	Listening to process/event descriptions	1
2.3	Describing and discussing the reasons of accidents or disasters	1
2.4	Reading longer technical texts– cause and effect essays	1
2.5	Writing responses to complaints	1
2.6	Active Passive Voice transformations	2
2.7	Infinitive and Gerunds	1
2.8	Word Formation (Noun-Verb-Adj-Adv), Adverbs.	1
3	**Problem Solving**	
3.1	Listening to documentaries and suggesting solutions	1
3.2	Group Discussion (based on case studies)	2
3.3	Reading Case Studies, excerpts from literary texts and news reports	1
3.4	Letter to the Editor	1
3.5	Checklists	1
3.6	Problem solution and argumentative essays	1
3.7	Error correction and Sentence Completion	1
3.8	If conditional sentences	1
4	**Reporting of Events and Research**	
4.1	Listening Comprehension	1
4.2	Interviewing and presenting oral reports	1
4.3	Mini presentations on select topics	1
4.4	Reading newspaper articles	1
4.5	Recommendations	1
4.6	Transcoding	1
4.7	Precis writing, Summarising and Plagiarism	1
4.8	Reported Speech, Modals	1
4.9	Conjunctions	1
5	**The Ability to put Ideas or Information Coherently**	
5.1	Listening to Formal job interviews	1
5.2	Role plays	2
5.3	Virtual interviews	1
5.4	Reading Company profiles	1
5.5	Writing Statement of Purpose (SoPs)	1
5.6	Writing Résumé	1
5.7	Numerical Adjectives and Relative Clauses - Idioms	1
5.8	question types: Wh/ Yes or No/ and Tags	1

Course Designer(s)

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

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TIRUCHENGODE-637 215

60 MA 003	Integrals, Partial Differential Equations and Laplace Transform	Category	L	T	P	Credit
		BS	3	1	0	4

Objectives

- To acquire the knowledge about multiple integrals.
- To familiarize the basic concepts of vector calculus.
- To get exposed to the fundamentals of analytic functions.
- To solve various types of partial differential equations.
- To familiarize the concepts of Laplace transform.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Interpret the basic concepts of double and triple integrals.	Apply
CO2	Interpret the basic concepts of vector calculus.	Apply
CO3	Construct the analytic functions and evaluate complex integrals.	Apply
CO4	Compute the solution of partial differential equations using different methods.	Apply
CO5	Apply Laplace transform techniques for solving differential equations.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO2	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO3	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO4	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO5	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	1	2		
Remember	10	10	10	10
Understand	10	10	20	20
Apply	40	40	70	70
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-
Total	60	60	100	100

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 MA 003 – Integrals, Partial Differential Equations and Laplace Transform

Common to MECH, ECE, EEE, CSE, MCT, CIVIL, IT, TXT, BT, FT

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
II	3	1	0	60	4	40	60	100

MULTIPLE INTEGRALS Double integration – Cartesian and polar co-ordinates – Change of order of integration – Area as double integral – Triple integration in Cartesian co-ordinates – Change of variables - Cartesian to polar co-ordinates and Cartesian to Cylindrical co-ordinates. **Hands - on:** Evaluating double integrals, triple integrals, area as double integrals and volume as triple integrals.	[9]
VECTOR CALCULUS* Introduction - Gradient of a scalar point function –Directional derivative – Angle of intersection of two surfaces – Divergence and curl (excluding vector identities) – Solenoidal and irrotational vectors – Application: Green's theorem in the plane – Gauss divergence theorem -Stokes' theorem (statement only). **Hands - on:** Evaluating Gradient, divergence and curls.	[9]
ANALYTIC FUNCTIONS AND INTEGRALS Analytic function – Necessary and Sufficient conditions (statement only)-Properties – Harmonic function – Construction of an analytic function – Cauchy's Integral theorem (statement only) – Cauchy's integral formula – Classification of singularities – Application: Cauchy's residue theorem. **Hands - on:** Plotting and visualizing functions of single variable, two and three variables.	[9]
PARTIAL DIFFERENTIAL EQUATIONS* Formation of partial differential equations by eliminating arbitrary constants and arbitrary functions – Non-Linear partial differential equations of first order – Lagrange's linear equations – Application: Homogeneous Linear partial differential equations with constant coefficients. **Hands - on:** Calculate homogeneous linear partial differential equations.	[9]
LAPLACE TRANSFORM Conditions for existence – Transforms of elementary functions – Basic properties - Derivatives and integrals of transforms - Initial and final value theorem – Transform of periodic functions. Inverse Laplace transform – Convolution theorem (excluding proof) – Application: Solution of second order ordinary differential equations with constant co-efficients. **Hands - on:**Evaluating laplace, Inverse laplace transforms and solve differential equations.	[9]
Total Hours: 45 + 5(Hands on) + 10(Tutorial)	**60**

Text Book(s):

1.	Grewal B.S, "Higher Engineering Mathematics", 44th Edition, Khanna Publishers, Delhi, 2017.
2.	Veerarajan T, "Engineering Mathematics", for Semesters I & II, 1st Edition, Tata McGraw Hill Publishing Co., New Delhi, 2019.

Reference(s):

1.	Kreyszig Erwin, "Advanced Engineering Mathematics", 10th Edition, John Wiley and Sons (Asia) Limited, New Delhi, 2016.
2.	Kandasamy P, Thilagavathy K and Gunavathy K, "Engineering Mathematics - I", S.Chand & Company Ltd, New Delhi, 2017
3.	Bali N P and Manish Goyal, "A text book of Engineering Mathematics",10th Edition, Laxmi Publications (P) Ltd, 2016.
4.	Dr.P.N.Agrawal, Dr.D.N.Pandey ,"Integral Equations, Calculus of Variations and its Applications", NPTEL online video courses.

*SDG 9 – Industry Innovation and Infrastructure

**SDG 3 – Good Health and Well Being

***SDG 7 – Affordable and Clean Energy

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1	**MULTIPLE INTEGRALS**	
1.1	Double integration	1
1.2	Cartesian and polar coordinates	1
1.3	Change of order of integration	1
1.4	Area as double integral	1
1.5	Triple integration in Cartesian coordinates	1
1.6	Change of variables	2
1.7	Cartesian to polar coordinates	1
1.8	Cartesian to Cylindrical coordinates	1
1.9	Tutorial	2
1.10	Hands on	1
2	**VECTOR CALCULUS**	
2.1	Introduction: Gradient of a scalar point function	1
2.2	Directional derivative	1
2.3	Angle of intersection of two surfaces	1
2.4	Divergence and curl (excluding vector identities)	1
2.5	Solenoidal and irrotational vectors	1
2.6	Application: Green's theorem in the plane	1
2.7	Gauss divergence theorem	2
2.8	Stokes' theorem (statement only)	1
2.9	Tutorial	2
2.10	Hands on	1
3	**ANALYTIC FUNCTIONS AND INTEGRALS**	
3.1	Analytic function	1
3.2	Necessary and Sufficient conditions (statement only)	1
3.3	Properties	1
3.4	Harmonic function	1
3.5	Construction of an analytic function	1
3.6	Cauchy's Integral theorem (statement only), Cauchy's integral formula	2
3.7	Classification of singularities	1
3.8	Applications : Cauchy's residue theorem.	1
3.9	Tutorial	2
3.10	Hands on	1
4	**PARTIAL DIFFERENTIAL EQUATIONS**	
4.1	Formation of partial differential equations by eliminating arbitrary constants	1
4.2	Formation of partial differential equations by eliminating arbitrary functions	2
4.3	Non- linear partial differential equations of first order	3
4.4	Lagrange's linear equations	1
4.5	Application: Homogeneous Linear partial differential equations with constant coefficients.	2
4.6	Tutorial	2
4.7	Hands on	1
5	**LAPLACE TRANSFORM**	

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5.1	Conditions for existence	1
5.2	Transforms of elementary functions	1
5.3	Basic properties	1
5.5	Derivatives and integrals of transforms, Initial and final value theorem	1
5.6	Transform of periodic functions	1
5.7	Inverse Laplace transform	1
5.8	Convolution theorem (excluding proof)	1
5.9	Application: Solution of second order ordinary differential equation with constant co-efficient.	2
5.10	Tutorial	2
5.11	Hands on	1

Course Designer(s)

1. Dr. C. Chandran cchandran@ksrct.ac.in
2. Dr. K. Prabakaran prabakaran@ksrct.ac.in

Passed in BoS Meeting held on 22/12/2022
Approved in Academic Council Meeting held on 07/01/2023

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

60 EE 002	BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION	Category	L	T	P	Credit
		ES	3	0	0	3

Objectives

- To familiarize the basic concept on electrical circuits and its various parameters
- To facilitate the various types of electrical machines and their uses
- To provide exposure on the functions of analog electronic devices
- To familiarize the use of various measuring instruments
- To gain knowledge on microprocessor and microcontroller

Pre-requisites

- Nil

Course Outcomes

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

CO1	Compute the electric circuit parameters for simple problems.	Apply
CO2	Interpret the working principle of electrical machines.	Understand
CO3	Demonstrate the characteristics of analog electronic devices.	Apply
CO4	Illuminate the types and operating principles of transducers, sensors and instruments.	Understand
CO5	Apply the basic concept of microprocessor and microcontroller.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	2	-	-	-	2	2	-	3	-
CO3	3	2	-	-	-	2	2	2	2	2	2	2	-	2	-
CO4	3	2	-	-	-	2	2	2	2	2	2	2	-	2	-
CO5	3	1	-	-	-	2	-	-	2	2	2	2	-	1	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

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Approved in Academic Council Meeting held on 07/01/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 EE 002 - Basic Electrical, Electronics and Instrumentation								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
II	3	0	0	45	3	40	60	100

Electrical Circuits: Basic circuit components -Resistor-Inductors-Capacitors- Ohm's Law- Kirchhoff's Law— Only Independent Sources — steady state solution of DC circuits — Nodal analysis, Mesh analysis. Introduction to AC circuits — waveforms and RMS value — power and power factor**, single phase and three-phase balanced circuits — Three phase loads — housing wiring, industrial wiring, materials of wiring.	[9]
Electrical Machines: Construction, operation and characteristics of DC Machines, three phase and single-phase induction motors. Construction and operation of single and three phase Transformers.	[9]
Electronic Devices & Circuits: PN Diodes –Zener diode- Bipolar Junction Transistor– SCR- VI Characteristics and Application* Introduction to operational Amplifier –Inverting Amplifier –Non Inverting Amplifier –DAC — ADC.	[9]
Transducers Sensors& Instruments: Introduction to transducers — Classification of Transducers: Resistive-Strain Gauge. Inductive-LVDT, Capacitive. Thermoelectric, piezoelectric, photoelectric, Hall effect, Proximity- Sensors. Classification of instruments — Types of indicating Instruments — multimeters – Oscilloscopes— three-phase power measurements– instrument transformers (CT and PT).	[9]
Microprocessor and Microcontroller: Introduction to Architecture of 8086 microprocessor-register-addressing modes-instruction set-simple programming. Introduction to Architecture of 8051 microcontroller-interfacing peripheral devices- design a microcontroller-based system*.	[9]
Total Hours:	**45**

Text Book(s):	
1.	D P Kothari and I.J Nagarath, "Basic Electrical and Electronics Engineering", McGraw Hill Education (India) Private Limited, Second Edition, 2020.
2.	A.K. Sawhney, Puneet Sawhney 'A Course in Electrical & Electronic Measurements & Instrumentation', Dhanpat Rai and Co, 2015.
Reference(s):	
1.	S.K. Bhattacharya, Basic Electrical Engineering, Pearson Education, 2019.
2.	Thomas L. Floyd, 'Electronic Devices', 10th Edition, Pearson Education, 2018.
3.	H.S. Kalsi, 'Electronic Instrumentation', Tata McGraw-Hill, New Delhi, 2010.
4.	N. Senthil Kumar, 'Microprocessors and Interfacing 8086, 8051, 8096, and advanced processors' oxford University press,2012

*SDG 9 – Industry Innovation and Infrastructure

**SDG 12 – Responsible Consumption and Production

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1	**ELECTRICAL CIRCUITS**	
1.1	Basic circuit components -Resistor-Inductors-Capacitors	1
1.2	Ohm's Law - Kirchhoff's Laws	1
1.3	Ohm's Law - Kirchhoff's Laws - Problems	1
1.4	Nodel analysis & Problems	1
1.5	Mesh analysis & Problems	1
1.6	Introduction to AC circuits — waveforms & RMS value — power & power factor	1
1.7	Single phase and three-phase balanced circuits	1
1.8	Three phase loads	1
1.9	Housing wiring, industrial wiring, materials of wiring	1
2	**ELECTRICAL MACHINES**	
2.1	Construction of DC Machines	1
2.2	Types of DC Machines	1
2.3	Operation of DC Machines	1
2.4	Characteristics of DC Machines	1
2.5	Three phase induction motors	1
2.6	Single-phase induction motors	1
2.7	Construction of single-phase Transformers	1
2.8	Operation of single-phase Transformers	1
2.9	Construction and Operation of three phase Transformers	1
3	**ELECTRONIC DEVICES & CIRCUITS**	
3.1	PN Diodes	1
3.2	Zener diode	1
3.3	Bipolar Junction Transistor	1
3.4	SCR	1
3.5	Introduction to operational Amplifier	1
3.6	Inverting Amplifier	1
3.7	Non Inverting Amplifier	1
3.8	DAC	1
3.9	ADC	1
4	**TRANSDUCERS, SENSORS & INSTRUMENTS**	
4.1	Introduction to transducers — Classification of Transducers:	1
4.2	Resistive- Strain Gauge. Inductive-LVDT,	1
4.3	Capacitive. Thermoelectric, piezoelectric, photoelectric,	1
4.4	Hall effect, Proximity- Sensors.	1
4.5	Classification of instruments — Types of indicating Instruments	1
4.6	Multimeters	1
4.7	Oscilloscopes	1
4.8	three-phase power measurements–	1
4.9	instrument transformers (CT and PT).	1
5	**MICROPROCESSOR AND MICROCONTROLLER**	
5.1	Introduction to Architecture of 8086 microprocessor	1
5.2	Register	1
5.3	Addressing modes	1

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5.4	Instruction set	1
5.5	Simple programming	1
5.6	Introduction to Architecture of 8051 microcontroller	2
5.7	Interfacing peripheral devices	1
5.8	Design a microcontroller-based system.	1

Course Designer(s)

1. Dr.P.Aravindan - aravindan@ksrct.ac.in,
2. Dr.D.Sri Vidhya - srividhya@ksrct.ac.in

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60 ME 004	ENGINEERING MECHANICS	Category	L	T	P	Credit
		ES	3	1	0	4

Objectives

This course aims to convey to the student

- To learn a process for analysis of static objects, concepts of force, moment, and mechanical equilibrium in two and three dimensions.
- To learn the equilibrium of rigid bodies such as frames, trusses, beams.
- To identify the properties of surfaces and solids by using different theorem.
- To impart basic concept of dynamics of particles.
- To acquire the concept of friction and elements of rigid body dynamics

Pre-requisites

- Nil

Course Outcomes

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

CO1	Use scalar and vector analytical techniques for analysing forces in statically determinate structures.	Apply
CO2	Apply basic knowledge of scientific concepts to solve real-world problems.	Apply
CO3	Calculate the properties of surfaces and solids using various theorems.	Apply
CO4	Analyse and solve problems on kinematics and kinetics.	Apply
CO5	Analysis of rigid body dynamics and calculation of frictional forces on contact surfaces.	Apply

Mapping with Programme Outcomes

COs	POs											PSOs			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	3	-	-	-	-	-	-	-	-	-	2	3	-
CO2	3	3	3	-	-	-	-	-	-	-	-	-	2	3	-
CO3	3	3	3	-	3	-	-	3	-	-	-	-	2	3	-
CO4	3	3	3	-	3	-	-	3	-	-	-	-	2	3	-
CO5	3	3	2	-	-	-	-	-	-	-	-	-	2	3	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	1	2		
Remember	12	12	20	20
Understand	-	20	-	-
Apply	48	48	80	80
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-
Total	60	60	100	100

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech – Textile Technology

60 ME 004 - Engineering Mechanics

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
II	3	1	0	60	4	40	60	100

Basics and Statics of Particles* Introduction -Units and Dimensions-Laws of Mechanics–Principle of transmissibility-Lame's theorem, Parallelogram and triangular Law of forces–Vectors–Vectorial representation of forces and moments. **Vector Operations*** Addition, subtraction, dot product, cross product-Coplanar Forces–Resolution and Composition of forces–Equilibrium of a particle–Forces in space-Equilibrium of a particle in space-Equivalent systems of forces-Single equivalent force.	[9+3]
Equilibrium of Rigid Bodies * Free body diagram–Types of supports and their reactions–requirements of stable equilibrium–Static determinacy, Moments and Couples–Moment of a force about a point and about an axis–Vectorial representation of moments and couples–Varignon's theorem-Equilibrium of Rigid bodies in two dimensions.	[9+3]
Properties of Surfaces and Solids * Determination of Areas and Volumes-Centroid, Moment of Inertia of plane area (Rectangle, circle, triangle using Integration Method; T section, I section, Angle section, Hollow section using standard formula) - Parallel axis theorem and perpendicular axis theorem- Polar moment of inertia -Mass moment of inertia of thin rectangular section.	[9+3]
Friction * Frictional force–Laws of Coloumb friction–Simple contact friction–Ladder friction-Rolling resistance–Ratio of tension in belt. **Dynamics of Particles *** Displacement, Velocity, acceleration and their relationship–Relative motion -Projectile motion in horizontal plane– Newton's law–Work Energy Equation – Impulse and Momentum.	[9+3]
Elements of Rigid Body Dynamics* Translation and Rotation of Rigid Bodies: Velocity and acceleration–General Plane motion: Crank and Connecting rod mechanism.	[9+3]
Total Hours:	**60**

Text Book(s):	
1.	D P Kothari and I.J Nagarath, "Basic Electrical and Electronics Engineering", McGraw Hill Education (India) Private Limited, Second Edition, 2020.
2.	A.K. Sawhney, Puneet Sawhney 'A Course in Electrical & Electronic Measurements & Instrumentation', Dhanpat Rai and Co, 2015.
3.	S.K. Bhattacharya, Basic Electrical Engineering, Pearson Education, 2019.
4.	James A Svoboda, Richard C. Dorf, Dorf's Introduction to Electric Circuits, Wiley,2018
5.	N. Senthil Kumar, 'Microprocessors and Interfacing 8086, 8051, 8096, and advanced processors' oxford University press, 2012.
Reference(s):	
1.	John Bird, "Electrical Circuit theory and technology", Routledge; 2017.
2.	Thomas L. Floyd, 'Electronic Devices', 10th Edition, Pearson Education, 2018.
3.	Albert Malvino, David Bates, 'Electronic Principles, McGraw Hill Education; 7th edition, 2017.
4.	Muhammad H.Rashid, "Spice for Circuits and electronics", 4th Edition., Cengage India, 2019.

*SDG 9 – Industry Innovation and Infrastructure

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TIRUCHENGODE-637 215

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1	**Basics and Statics Of Particles**	
1.1	Introduction, Units and Dimensions, Laws of Mechanics	1
1.2	Principle of transmissibility, Lame's theorem,	1
1.3	Parallelogram and triangular Law of forces	1
1.4	Tutorial	2
1.5	Vectors, Vectorial representation of forces and moments	1
1.6	Vector operations, Coplanar Forces–Resolution and Composition of forces	2
1.7	Equilibrium of a particle, Forces in space	1
1.8	Equivalent systems of forces-Single equivalent force.	1
1.9	Tutorial	2
2	**Equilibrium of Rigid Bodies**	
2.1	Free body diagram, Types of supports and their reactions	1
2.2	Requirements of stable equilibrium, Static determinacy	1
2.3	Moments and Couples–Moment of a force about a point and about an axis	2
2.4	Vectorial representation of moments and couples	1
2.5	Tutorial	2
2.6	Varignon's theorem	1
2.7	Equilibrium of Rigid bodies in two dimensions	2
2.8	Tutorial	2
3	**Properties of Surfaces and Solids**	
3.1	Determination of Areas and Volumes-Centroid	1
3.2	Moment of Inertia of plane area (Rectangle, circle, triangle using Integration Method)	2
3.3	Tutorial	2
3.4	Moment of Inertia of plane area(T section, I section, Angle section)	1
3.5	Moment of Inertia of plane area(Hollow section)	1
3.6	Parallel axis theorem and perpendicular axis theorem	1
3.7	Polar moment of inertia	1
3.8	Mass moment of inertia of thin rectangular section.	1
3.9	Tutorial	2
4	**Friction &Dynamics of Particles**	
4.1	Frictional force, Laws of Coloumb friction, Simple contact friction	1
4.2	Ladder friction	1
4.3	Rolling resistance–Ratio of tension in belt	1
4.4	Tutorial	2
4.5	Displacement, Velocity, acceleration and their relationship, Relative motion	1
4.6	Projectile motion in horizontal plane	1
4.7	Newton's law	1
4.8	Work Energy Equation	1
4.9	Impulse and Momentum	1
4.10	Tutorial	2
5	**Elements of Rigid Body Dynamics**	
5.1	Translation and Rotation of Rigid Bodies	1
5.2	Translation and Rotation of Rigid Bodies - Velocity	2

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5.3	Translation and Rotation of Rigid Bodies - acceleration	2
5.4	Tutorial	2
5.5	General Plane motion	1
5.6	General Plane motion - Crank and Connecting rod mechanism	2
5.7	Tutorial	2

Course Designer(s)

1. Dr.S.Jeyaprakasam – sjeyaprakasam@ksrct.ac.in
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60 CS 001	C PROGRAMMING	Category	L	T	P	Credit
		ES	3	0	0	3

Objectives

- To learn most fundamental element of the C language and to examine the execution of branching, looping statements,
- To examine the concepts of arrays, its characteristics and types and strings.
- To understand the concept of functions, pointers and the techniques of putting them to use
- To apply the knowledge of structures and unions to solve basic problems in C language
- To enhance the knowledge in file handling functions for storage and retrieval of data

Pre-requisites

- Nil

Course Outcomes

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

CO1	Construct the fundamental building blocks of structured Programming in C	Apply
CO2	Implement the different operations on arrays and strings	Apply
CO3	Develop simple real world applications utilizing functions, recursion and pointers.	Apply
CO4	Demonstrate the concepts of structures, unions, user defined data types and preprocessor	Apply
CO5	Interpret the file concepts using proper standard library functions for a given application	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
CO2	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
CO3	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
CO4	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
CO5	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

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Approved in Academic Council Meeting held on 07/01/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 CS 001 – C Programming								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
II	3	0	0	45	3	40	60	100

Basics of C, I/O, Branching and Loops* Structure of a C Program – Data types – Keywords - Variables – Type Qualifiers - Constants – Operators–expressions and precedence- Console I/O– Unformatted and Formatted Console I/O - Conditional Branching and Loops-Writing and evaluation of conditionals and consequent branching	[9]
Arrays and Strings* Arrays: One Dimensional Arrays - Two Dimensional Arrays – Matrix Manipulation - Character arrays – Strings: String Manipulation with and without String Handling Functions.	[7]
Functions and Pointers* Functions: Scope of a Function – Library Functions and User defined functions - Function Prototypes – Call by value and Call by reference – Function Categorization- Arguments to main function— Recursion and application - Passing Arrays to Functions– Storage class Specifiers. Introduction to Pointer Variables - The Pointer Operators - Pointer Expressions - Pointers and Arrays - Generating a Pointer to an Array - Indexing Pointers– Function and pointers - Dynamic memory allocation.	[11]
Structures, Unions, Enumerations, Typedef and Preprocessors* Structures - Introduction to Structures and Initialization - Arrays of Structures- Arrays and Structures, Nested Structures - Passing Structures to Functions - Structure Pointers - Unions – Bit Fields - Enumerations - typedef –The preprocessor and commands	[9]
File Handling* File: Streams –Reading and Writing Characters - Reading and Writing Strings - File System functions – File Manipulation-Sequential access - Random Access Files – Command Line arguments.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Herbert Schildt, “The Complete Reference C”, Fourth Edition, Tata McGraw Hill Edition, 2010.
2.	Byron Gottfried, “Programming with C”, Third Edition, McGraw Hill Education, 2014.
Reference(s):	
1.	E.Balagurusamy, “Programming in ANSI C”, Seventh Edition, Tata McGraw Hill Edition, New Delhi, 2016.
2.	Brian W. Kernighan and Dennis M. Ritchie, “C Programming Language”, Prentice-Hall.
3.	ReemaThareja, “Computer Fundamentals and Programming in C”, Second Edition, Oxford Higher Education, 2016.
4.	K N King, “C Programming: A Modern Approach”, Second Edition, W.W.Norton, New York, 2008.

*SDG:4- Quality Education

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1	**Basics of C, I/O, Branching and Loops**	
1.1	Structure of a C Program, Keywords	1
1.2	Data types, Type Qualifiers	1
1.3	Variables and Constants	1
1.4	Operators–expressions and precedence	1
1.5	Console I/O– Unformatted and Formatted Console I/O	1
1.6	Conditional Branching	1
1.7	Iteration and loops	2
1.8	Writing and evaluation of conditionals and consequent branching	1
2	**Arrays and Strings**	
2.1	One Dimensional Array	1
2.2	Two-Dimensional Array and Matrix Manipulation	1
2.3	Character arrays and Strings Basics	1
2.4	String Manipulation without String Handling Functions	2
2.5	String Manipulation with String Handling Functions	2
3	**Functions and Pointers**	
3.1	Scope of a Function – Library Functions, User defined functions and Function Prototypes	1
3.2	Function Call by value and Function Call by reference, Function Categorization	2
3.3	Arguments to main function	1
3.4	Recursion and application	1
3.5	Passing Arrays to Functions	1
3.6	Storage class Specifiers	1
3.7	Introduction to Pointer Variables - The Pointer Operators - Pointer Expressions	1
3.8	Pointers and Arrays - Generating a Pointer to an Array - Indexing Pointers	1
3.9	Function and pointers	1
3.10	Dynamic memory allocation	1
4	**Structures, Unions, Enumerations, Typedef and Preprocessors**	
4.1	Introduction to Structures and Initialization	1
4.2	Arrays and Structures, Arrays of Structures	1
4.3	Structures within Structures, Passing Structures to Functions	2
4.4	Structure Pointers	1
4.5	Unions and Bit Fields.	1
4.6	Enumerations - typedef	1
4.7	Preprocessor commands	2
5	**File Handling**	
5.1	File Streams –Reading and Writing Characters - Reading and Writing Strings	2
5.2	File System functions and File Manipulation	2
5.3	Sequential access	2
5.4	Random Access Files	2
5.5	Command Line arguments and files	1

Course Designer(s)

1. Dr.P.Kaladevi - kaladevi@ksrct.ac.in

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60 TT 201	FIBRE SCIENCE	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- To study the basics of production of natural and regenerated fibers
- To impart knowledge on applications and properties of natural fibres
- To familiarize on the applications and properties of regenerated fibres
- To recall on the applications and properties of protein fibres
- To study the analysis of various fibres

Pre-requisites

- Nil

Course Outcomes

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

CO1	Classify the textile fibres and its properties	Understand
CO2	Cultivation / extraction process, properties and applications of Natural cellulosic fibres and their structure.	Understand
CO3	Manufacturing, properties and applications of regenerated cellulosic fibres and their structure.	Apply
CO4	Production, properties and applications of protein and other regenerated fibres with their structure and applications of high performance fibres.	Apply
CO5	Identification of various fibres and blend proportion by various methods.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	-	-	2	-	-	-	2	-	3	3	-
CO2	3	-	-	-	-	-	2	-	-	-	2	-	3	3	-
CO3	3	-	-	-	-	-	2	-	-	-	2	-	3	3	-
CO4	3	-	-	-	-	-	2	-	-	-	2	-	3	3	-
CO5	3	-	-	-	-	-	2	-	-	-	2	-	2	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

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TIRUCHENGODE-637 215

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 TT 201 - FIBRE SCIENCE

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
II	3	0	0	45	3	40	60	100

INTRODUCTION Definition - staple fibre, filament; classification of textile fibres; High performance fibres. Essential and desirable properties of fibres. Requirements of fibre forming polymers. Types of polymers; intra polymer bonding, inter polymer forces of attraction, degree of polymerization, glass transition temperature. Principle of manmade spinning systems – Dry, Wet, Melt and Gel spinning. Elastomeric fibres	[9]
NATURAL CELLULOSIC FIBRES* **** ***** Cultivation, properties and applications of cotton; Brief study about BT, coloured and organic cotton,BCI. Extraction, properties and application of flax, jute, ramie, hemp, sisal, coir, banana and pine apple fibres. Morphological and chemical structure of natural cellulosic fibres.	[9]
**REGENERATED CELLULOSIC FIBRES* ** Production, properties and applications of viscose rayon, cuprammonium rayon, acetate rayon, bamboo, modal and lyocell fibres; Study of morphological and chemical structures of regenerated cellulosic fibres	[9]
PROTEIN AND OTHER REGENERATED FIBRES ****** Morphological structure and chemical constitution of wool and silk. Types, production, properties and applications of wool, silk, soya bean, casein, alginate, chitin and chitosan fibres. Study on spider silk.	[9]
IDENTIFICATION OF FIBRES** Fibre identification- microscope, chemical, burning, feeling, staining, density measurement methods. Determination of blend proportion. Determination of moisture content and moisture regain.	[9]
Total Hours:	**45**

Text Book(s):

1.	S.P.Mishra, “A Text book of Fibre science and technology”, New age international publishers, Chennai
2.	Morton W.E and Hearle J.W.S, “Physical properties of textile fibres”, Textile Institute, Manchester

Reference(s):

1.	Mather.R.R, “The Chemistry of Textile Fibres 2nd Ed” Hardcover publisher, 2015.
2.	Gohl, “Textile Science”, 2nd Edition, Paperback Publisher, 2005
3.	Georg Von Georgievic, “The Chemical Technology of Textile Fibres”, Paperback Publisher, 2007.
4.	Eichhorn, J.W. S. Hearle, et al.”, “Handbook of Textile Fibre Structure, Volume 1” Woodhead Publishing, 2009

*SDG: 9 Industry, Innovation and Infrastructure
**SDG:12 (Responsible Consumption and Production)
***SDG 2: Zero Hunger
****SDG 8: Decent Work and Economic Growth
***** SDG 13: Climate Action
******SDG 15 :Life on Land

Passed in BoS Meeting held on 22/12/2022
Approved in Academic Council Meeting held on 07/01/2023

BoS Chairman
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Department of Textile Technology
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Course Contents and Lecture Schedule		
S.No	**Topic**	**No. of Hours**
1.0	**INTRODUCTION**	
1.1	Definition - staple fibre, filament	1
1.2	classification of textile fibres	1
1.3	High performance fibres Essential and desirable properties of fibre	1
1.4	Requirements of fibre forming polymers. Types of polymers	1
1.5	Intra polymer bonding, inter polymer forces of attraction	1
1.6	Degree of polymerization, glass transition temperature	1
1.7	Principle of manmade spinning systems – Dry, Wet	1
1.8	Melt and Gel spinning	2
2.0	**NATURAL CELLULOSIC FIBRES**	
2.1	Cultivation, properties and applications of cotton	1
2.2	Brief study about BT, coloured and organic cotton	2
2.3	Extraction, properties and application of flax, jute	1
2.4	Extraction, properties and application of ramie, hemp	1
2.5	Extraction, properties and application of sisal, coir	1
2.6	Extraction, properties and application of banana and pine apple fibres	1
2.7	Morphological and chemical structure of natural cellulosic fibres	2
3.0	**REGENERATED CELLULOSIC FIBRES**	
3.1	Production, properties and applications of viscose rayon, cuprammonium rayon	2
3.2	Production, properties and applications of acetate rayon, bamboo	2
3.3	Production, properties and applications of modal and lyocell fibres	2
3.4	Study of morphological regenerated cellulosic fibres	2
3.5	Study of chemical structures of regenerated cellulosic fibres	1
4.0	**PROTEIN AND OTHER REGENERATED FIBRES**	
4.1	Morphological structure and chemical constitution of wool	2
4.2	Morphological structure and chemical constitution of silk	2
4.3	Types, production, properties and applications of wool, silk	1
4.4	Types, production, properties and applications of soya bean, casein	1
4.5	Types, production, properties and applications of alginate, chitin	1
4.6	Types, production, properties and applications of chitosan fibres	1
4.7	Study on spider silk	1
5.0	**IDENTIFICATION OF FIBRES**	
5.1	Fibre identification – microscope, chemical	1
5.2	Fibre identification – burning, feeling	1
5.3	Fibre identification –staining, density measurement methods	1
5.4	Determination of blend proportion	2
5.5	Determination of moisture content	2
5.6	Determination of moisture regain	2

Course Designers

1. Ms.C.Premalatha : premalatha@ksrct.ac.in

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60 GE002	தமிழரும் தொழில் நுட்பமும்	Category	L	T	P	Credit
		GE	1	0	0	1

Objectives

- தமிழர்களின் சங்ககால நெசவு, பானை வனைதல் குறித்து அறிதல்.
- தமிழர்களின் கட்டிடத் தொழில் நுட்பம் குறித்து அறிதல்.
- தமிழர்களின் உற்பத்தி முறைகள் குறித்து அறிதல்.
- தமிழர்களின் சங்ககால வேளாண்மை, நீர்ப்பாசனம் குறித்து கற்றல்.
- நவீன அறிவியல் தமிழ் மற்றும் கணித்தமிழ் குறித்த புரிதல்

Pre-requisites

- தேவை இல்லை

Course Outcomes

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

CO1	சங்ககாலத் தமிழர்களின் நெசவு மற்றும் பானை வனைதல் தொழில்நுட்பம் குறித்த கற்றுணர்தல்.	புரிதல்
CO2	சங்ககாலத் தமிழர்களின் கட்டிட தொழில்நுட்பம் கட்டுமானப் பொருட்கள் மற்றும் அவற்றை விளக்கும் தளங்கள் குறித்த அறிவு.	புரிதல்
CO3	சங்ககாலத் தமிழர்களின் உலோகத் தொழில் நாணயங்கள் மற்றும் மணிகள் சார்ந்த தொல்லியல் சான்றுகள் பற்றிய அறிவு.	புரிதல்
CO4	சங்ககாலத் தமிழர்களின் வேளாண்மை, நீர்ப்பாசன முறைகள் மற்றும் முத்து குளித்தல் குறித்த தெளிவு.	புரிதல்
CO5	நவீன அறிவியல் தமிழ் மற்றும் கணித்தமிழ் குறித்த புரிந்துகொள்ளலும் மற்றும் பயன்படுத்துதலும்.	புரிதல்,

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	-	-	-	-	-	-	3	3	3	2	-	3	-	-	-
CO2	3	-	-	-	-	-	2	3	2	2	-	3	-	-	-
CO3	3	-	-	-	-	-	3	3	3	2	-	3	-	-	-
CO4	3	-	-	-	-	2	3	3	2	2	-	3	-	-	-
CO5	3	-	-	-	3	-	-	3	-	3	-	3	-	-	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Model Examination (Marks)	End Sem Examination (Marks)
Remember	50	20
Understand	50	80
Apply	-	-
Analyse	-	-
Evaluate	-	-
Create	-	-
Total	100	100

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech – Textile Technology

60GE 002–தமிழரும் தொழில்நுட்பமும்

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
II	3	0	0	45	3	40	60	100

நெசவு மற்றும் பானைத் தொழில்நுட்பம்* சங்க காலத்தில் நெசவுத் தொழில் -பானைத் தொழில்நுட்பம் - கருப்பு சிவப்பு பாண்டங்கள் - பாண்டங்களில் கீறல் குறியீடுகள்.	[3]
வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம்* சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்க காலத்தில் வீட்டுப் பொருட்களில் வடிவமைப்பு- சங்க காலத்தில் கட்டுமான பொருட்களும் நடுகல்லும் - சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள் - மாமல்லபுரச் சிற்பங்களும், கோவில்களும் - சோழர் காலத்துப் பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத் தலங்கள் - நாயக்கர் காலக் கோயில்கள் - மாதிரி கட்டமைப்புகள் பற்றி அறிதல், மதுரை மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலை நாயக்கர் மஹால் - செட்டிநாட்டு வீடுகள் - பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோ-சாரோசெனிக் கட்டிடக் கலை.	[3]
உற்பத்தித் தொழில் நுட்பம்* கப்பல் கட்டும் கலை - உலோகவியல் -இரும்புத் தொழிற்சாலை - இரும்பை உருக்குதல், எஃகு - - வரலாற்றுச் சான்றுகளாக செம்பு மற்றும் தங்க நாணயங்கள் - நாணயங்கள் அச்சடித்தல் -மணி உருவாக்கும் தொழிற்சாலைகள் - கல்மணிகள், கண்ணாடி மணிகள் - சுடுமண் மணிகள் - சங்கு மணிகள் - எலும்புத்துண்டுகள் - தொல்லியல் சான்றுகள் - சிலப்பதிகாரத்தில் மணிகளின் வகைகள்.	[3]
வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் நுட்பம்* அணை, ஏரி, குளங்கள், மதகு - சோழர்காலக் குமுழித் தூம்பின் முக்கியத்துவம் - கால்நடை பராமரிப்பு - கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள் - வேளாண்மை மற்றும் வேளாண்மைச் சார்ந்த செயல்பாடுகள் - கடல்சார் அறிவு - மீன்வளம் - முத்து மற்றும் முத்துக்குளித்தல் - பெருங்கடல் குறித்த பண்டைய அறிவு – அறிவுசார் சமூகம்.	[3]
அறிவியல் தமிழ் மற்றும் கணித்தமிழ்* அறிவியல் தமிழின் வளர்ச்சி - கணித்தமிழ் வளர்ச்சி - தமிழ் நூல்களை மின்பதிப்பு செய்தல் -தமிழ் மென்பொருட்கள் உருவாக்கம் - தமிழ் இணையக் கல்விக்கழகம் - தமிழ் மின் நூலகம் - இணையத்தில் தமிழ் அகராதிகள் - சொற்குவைத் திட்டம்.	[3]
Total Hours:	**15**
Text Book(s):	

1.	முனைவர் கே. கே. பிள்ளை, தமிழக வரலாறு - மக்களும் பண்பாடும், தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம், 18th Ed, 2022.
2.	முனைவர் இல. சுந்தரம், கணினித்தமிழ்,விகடன் பிரசுரம், 2nd Ed 2021
3.	முனைவர் இரா.சிவானந்தம், மு.சேரன், கீழடி - வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம், தொல்லியல் துறை வெளியீடு, 6th Ed 2020.
4.	முனைவர் இரா.சிவானந்தம் , முனைவர் ஜெ.பாஸ்கர், பொருநை - ஆற்றங்கரை நாகரிகம், தொல்லியல் துறை வெளியீடு,1st Ed 2022
5.	Dr.K.K.Pillay, Social Life of Tamils, TNTB & ESC and RMRL – (In print).
6.	Dr.S.Singaravel, Social Life of the Tamils - The Classical Period, International Institute of Tamil Studies, 1st Ed 2001.
7.	Dr.S.V.Subaramanian, Dr.K.D. Thirunavukkarasu, Historical Heritage of the Tamils, International Institute of Tamil Studies, 2nd Ed, 2010
8.	Dr.M.Valarmathi, The Contributions of the Tamils to Indian Culture, International Institute of Tamil Studies,
9.	Dr.R.Sivanantham, Keeladi - Sangam City Civilization on the banks of river Vaigai, Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation,

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10.	Dr.K.K.Pillay, Studies in the History of India with Special Reference to Tamil Nadu, K.K. Pillay(Published by the Author.
11.	Dr.R.Sivanantham, Dr.J.Baskar, Porunai Civilization, Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation.
12.	R.Balakrishnan, Journey of Civilization Indus to Vaigai, Roja Muthiah Research Library,3rd Ed 2022

***SDG:4- Quality Education**

#For Tamils and Technology, additional 1 credit is offered and not accounted for CGPA.

Note: Those who studied Tamil as language subject in +2 should write the exams (Model & End Semester Exams) in Tamil Language only. Those who did not study Tamil as language subject in +2 and other state students can write the exams in English Language. It is mandatory.

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1	சங்ககாலத்தில் நெசவுத்தொழில்	1
2	பானைத் தொழில்நுட்பம்-கருப்பு&சிவப்புபாண்டங்கள் - பாண்டங்களில் கீறல் குறியீடுகள்	1
3	சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்க காலத்தில்வீட்டுப் பொருட்களில் வடிவமைப்பு சங்க காலத்தில் கட்டுமானப் பொருட்களும் நடுகல்லும்	1
4	சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள் மாமல்லபுரச் சிற்பங்களும், கோவில்களும் சோழர் காலத்துப் பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத் தலங்கள் - நாயக்கர் காலக் கோயில்கள் கட்டமைப்புகள் பற்றி அறிதல்	1
5	மதுரை மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலை நாயக்கர் மஹால் செட்டிநாட்டு வீடுகள் பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோ சாரோசெனிக் கட்டிடக் கலை.	1
6	கப்பல் கட்டும் கலை உலோகவியல் இரும்புத் தொழிற்சாலை இரும்பை உருக்குதல்	1
7	எஃகு வரலாற்றுச் சான்றுகளாக செம்பு மற்றும் தங்க நாணயங்கள்- நாணயங்கள் அச்சடித்தல்	1
8	மணி உருவாக்கும் தொழிற்சாலைகள் கல்மணிகள் கண்ணாடிமணிகள் - சுடுமண் மணிகள் - சங்கு மணிகள் - எலும்புத் துண்டுகள் தொல்லியல் சான்றுகள் -சிலப்பதிகாரத்தில் மணிகளின் வகைகள்	1
9	அணை, ஏரி, குளங்கள், மதகு சோழர்காலக் குமுழித் தூம்பின் முக்கியத்துவம்	1
10	கால்நடை பராமரிப்பு கால்நடைகளுக்கான வடிவமைக்கப்பட்ட கிணறுகள் வேளாண்மை மற்றும் வேளாண்மை சார்ந்த செயல்பாடுகள்	1
11	கடல்சார் அறிவு - மீன்வளம் முத்து மற்றும் முத்துக்குளித்தல் பெருங்கடல் குறித்த பண்டையஅறிவு அறிவுசார் சமூகம்.	1
12	கணித்தமிழ் வளர்ச்சி தமிழ் நூல்களை மின்பதிப்புசெய்தல்	1
13	தமிழ் மென்பொருட்கள் உருவாக்கம்	1
14	தமிழ் இணையக் கல்விக்கழகம் தமிழ் மின் நூலகம்	1
15	இணையத்தில் தமிழ் அகராதிகள் சொற்குவைத் திட்டம்.	1

Course Designer(s)

Passed in BoS Meeting held on 22/12/2022
Approved in Academic Council Meeting held on 07/01/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60GE 002–Tamils and Technology								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
II	3	0	0	45	3	40	60	100

Weaving and Ceramic Technology* Weaving Industry during Sangam Age – Ceramic Technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries.	[3]
Design and Construction Technology* Designing and Structural construction House & Designs in household materials during Sangam Age – Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram – Sculptures and Temples of Mamallapuram – Great Temples of Cholas and other worship places – Temples of Nayaka Period - Type Study (Madurai Meenakshi Temple)- Thirumalai Nayakar Mahal – Chetti Nadu Houses , Indo – Saracenic architecture at Madras during British Period.	[3]
Manufacturing Technology* Art of Ship Building – Metallurgical studies – Iron Industry – Iron smelting ,Steel -Copper and gold coins as source of history – Minting of Coins – Beads making – industries Stone beads – Glass beads – Terracotta beads – Shell beads/bone beats – Archeological evidences -Gem stone types described in Silappathikaram.	[3]
Agriculture and Irrigation Technology* Dam,Tank,Ponds,Sluice,Significance of Kumizhi Thoompu of Chola Period,Animal Husbandry – Wells designed for cattle use – Agriculture and Agro Processing – Knowledge of Sea- Fisheries – Pearl – Conche diving -Ancient Knowledge of Ocean – Knowledge Specific Society.	[3]
Scientific Tamil and Tamil Computing* Development of Scientific Tamil – Tamil Computing – Digitalization of Tamil Books – Development of Tamil Software – Tamil Virtual Academy- Tamil Digital Library – Online Tamil Dictionaries – Sorkuvai Project.	[3]
Total Hours:	**15**
Text Book(s):	

1.	முனைவர் கே. கே. பிள்ளை, தமிழக வரலாறு - மக்களும் பண்பாடும், தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம், 18th Ed, 2022.
2.	முனைவர் இல. சுந்தரம், கணினித்தமிழ்,விகடன் பிரசுரம், 2nd Ed 2021
3.	முனைவர் இரா.சிவானந்தம், மு.சேரன், கீழடி - வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம், தொல்லியல் துறை வெளியீடு, 6th Ed 2020.
4.	முனைவர் இரா.சிவானந்தம் , முனைவர் ஜெ.பாஸ்கர், பொருநை - ஆற்றங்கரை நாகரிகம், தொல்லியல் துறை வெளியீடு,1st Ed 2022
5.	Dr.K.K.Pillay, Social Life of Tamils, TNTB & ESC and RMRL – (In print).
6.	Dr.S.Singaravel, Social Life of the Tamils - The Classical Period, International Institute of Tamil Studies, 1st Ed 2001.
7.	Dr.S.V.Subaramanian, Dr.K.D. Thirunavukkarasu, Historical Heritage of the Tamils, International Institute of Tamil Studies, 2nd Ed, 2010
8.	Dr.M.Valarmathi, The Contributions of the Tamils to Indian Culture, International Institute of Tamil Studies,
9.	Dr.R.Sivanantham, Keeladi - Sangam City Civilization on the banks of river Vaigai, Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation,
10.	Dr.K.K.Pillay, Studies in the History of India with Special Reference to Tamil Nadu, K.K. Pillay(Published by the Author.
11.	Dr.R.Sivanantham, Dr.J.Baskar, Porunai Civilization, Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation.
12.	R.Balakrishnan, Journey of Civilization Indus to Vaigai, Roja Muthiah Research Library,3rd Ed 2022

***SDG:4- Quality Education**

#For Tamils and Technology, additional 1 credit is offered and not accounted for CGPA.

Passed in BoS Meeting held on 22/12/2022
Approved in Academic Council Meeting held on 07/01/2023

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

60 EE 0P2	Basic Electrical, Electronics and Instrumentation Laboratory	Category	L	T	P	Credit
		ES	0	0	4	2

Objectives

- To provide knowledge on the basic electric circuital laws
- To practice the students in conducting load tests on DC & AC machines
- To gain practical experience in experimentally obtaining the characteristics of electronic devices
- To train the students to measure displacement using suitable transducer.
- To acquire knowledge in microprocessor and microcontroller

Pre-requisites

- Nil

Course Outcomes

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

CO1	Apply basic circuital laws to analyse the electrical circuits.	Apply
CO2	Analyse the performance of DC and AC Machines.	Analyse
CO3	Demonstrate the VI characteristics of analog electronic devices.	Apply
CO4	Express the suitable transducers to measure the physical quantities.	Understand
CO5	Apply the basic concept of microprocessor and microcontroller.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	3	-	-	-	-	2	-	-	-	-	-	-	3	-
CO3	3	3	-	-	-	-	2	-	-	-	-	2	-	2	-
CO4	3	3	-	-	-	-	2	-	-	-	-	2	-	3	-
CO5	3	3	-	-	-	-	2	-	3	-	-	3	-	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)	
	Lab	Activity			
Remember	-	-	-	-	-
Understand	10	-	0	-	10
Apply	20	12	50		50
Analyse	20	13	40		40
Evaluate	-	-	-	-	-
Create	-	-	-	-	-
Total	50	25	100	-	100

Passed in BoS Meeting held on 22/12/2022
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Department of Textile Technology
K S Rangasamy College of Technology
TIRUCHENGODE-637 215

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 EE 0P2 – Basic Electrical, Electronics and Instrumentation Laboratory								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
II	0	0	4	60	2	60	40	100

List of Experiments

1. Verification of Ohm's law.
2. Verification of KVL and KCL.
3. Determination of performance characteristics of Load test on DC Shunt Motor.
4. Determination of regulation and efficiency of single-phase transformer using load test.
5 Determination of performance characteristics of Load Test on Single Phase Induction Motor.
6. Determination of VI Characteristics of PN junction diode and Zener diode.
7. Determination of VI Characteristics of Characteristics of BJT.
8. Measurement of displacement using LVDT.
9. Programs for addition and subtraction in 8086.
10. Programs for addition and subtraction in 8051.

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

Lab Manual

1. "Basic Electrical, Electronics and Instrumentation" Laboratory Manual, KSRCT

Course Designer (s)

1. Dr.P.Aravindan - aravindan@ksrct.ac.in
2. Dr.D.Sri Vidhya - srividhya@ksrct.ac.in

Passed in BoS Meeting held on 22/12/2022
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TIRUCHENGODE-637 215

60 CS 0P1	C PROGRAMMING LABORATORY	Category	L	T	P	Credit
		ES	0	0	4	2

Objectives

- To enable the students to apply the concepts of C to solve simple problems
- To use selection and iterative statements in C programs
- To apply the knowledge of library functions in C programming
- To implement the concepts of arrays, functions, structures and pointers in C
- To implement the file handling operations through C

Pre-requisites

NIL

Course Outcomes

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

CO1	Implement computational problems using selection and iterative statements	Apply
CO2	Demonstrate C program to manage collection of related data.	Apply
CO3	Design and Implement different ways of passing arguments to functions, Recursion and implement pointers concepts.	Apply
CO4	Develop a C program to manage collection of different data using structures, Union, user-defined data types and preprocessor directives.	Apply
CO5	Demonstrate C program to store and retrieve data using file concepts.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
CO2	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
CO3	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
CO4	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
CO5	3	3	3	-	3	-	-	-	2	2	-	2	3	3	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

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K.S.Rangasamy College of Technology – Autonomous R2022								
B.E – Computer Science and Engineering								
60 CS 0P1 – C Programming Laboratory								
Semester	**Hours/Week**			**Total Hrs**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
II	0	0	4	60	2	60	40	100

List of Experiments:

1. Implementation of Simple computational problems using various formulas*.
2. Implementation of Problems involving Selection statements*.
3. Implementation of Iterative problems e.g., sum of series*.
4. Implementation of 1D Array manipulation*.
5. Implementation of 2D Array manipulation*.
6. Implementation of String operations*.
7. Implementation of Simple functions and different ways of passing arguments to functions and Recursive Functions*.
8. Implementation of Pointers*
9. Implementation of structures and Union*.
10. Implementation of Bit Fields, Typedef and Enumeration*.
11. Implementation of Preprocessor directives*.
12. Implementation of File operations*.

*SDG 4 – Quality Education

Course Designer(s)

1. Dr.P.Kaladevi - kaladevi@ksrct.ac.in

Passed in BoS Meeting held on 22/12/2022
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BoS Chairman
Head of the Department
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TIRUCHENGODE-637 215

60 CG 0P1	CAREER SKILL DEVELOPMENT I	Category	L	T	P	Credit
		CG	0	0	2	1*

Objectives

- To help learners improve their vocabulary and to enable them to use words appropriately in different academic and professional contexts
- To help learners develop strategies that could be adopted while reading texts
- To help learners acquire the ability to speak effectively in English in real life and career related situations
- To equip students with effective speaking and listening skills in English
- To facilitate learners to enhance their writing skills with coherence and appropriate format effectively

Pre-requisites

- Basic knowledge of reading and writing in English

Course Outcomes

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

CO1	Listen and comprehend complex academic texts	Understand
CO2	Read and infer the denotative and connotative meanings of technical texts	Analyse
CO3	Write definitions, descriptions, narrations, and essays on various topics	Apply
CO4	Speak fluently and accurately in formal and informal communicative contexts	Apply
CO5	Appraise the verbal ability skills in the career development and professional contexts	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	-	-	-	-	-	-	-	2	3	3	2	3	-	-	
CO2	-	-	-	-	-	-	-	2	3	3	2	3	-	-	2
CO3	-	-	-	-	-	-	-	2	3	3	2	3	2	-	-
CO4	-	-	-	-	-	-	-	2	3	3	2	3	-	-	-
CO5	-	-	-	-	-	-	-	2	3	3	2	3	-	2	2

3 - Strong; 2 - Medium; 1 - Some

Passed in BoS Meeting held on 22/12/2022
Approved in Academic Council Meeting held on 07/01/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech – Textile Technology

60 CG 0P1 - Career Skill Development I

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
II	0	0	2	30	1*	100	00	100

Listening* Listening for general information-specific details - audio / video (formal & informal) - Listen to podcasts/ TED talks/ anecdotes / stories / event narration / documentaries and interviews with celebrities - Listen to a product and process descriptions, advertisements about products or services.	[6]
Speaking* Self Introduction; Introducing a friend; conversation - politeness strategies - Narrating personal experiences / events; Interviewing a celebrity; reporting / and summarizing of documentaries / podcasts/ interviews - Picture description; giving instruction to use the product; presenting a product - Small Talk; Mini presentations - Group discussions, debates & role plays.	[6]
Reading* Loud reading vs Silent reading, Skimming & Scanning of passages, reading brochures (technical context), social media messages relevant to technical contexts and emails - Biographies, travelogues, newspaper reports and travel & technical blogs - Advertisements, gadget reviews and user manuals - Newspaper articles and Journal reports - Editorials; and opinion blogs	[6]
Writing* Writing letters – informal and formal – basics and format orientation - paragraph texting, short report on an event (field trip etc.) - Definitions; instructions; and product /process description - Note-making / Note-taking; recommendations; transferring information from non-verbal (charts, graphs to verbal mode) - Essay texting	[6]
Verbal Ability I* Reading Comprehension (MCQs) – Cloze Test - Sequencing of sentences – Summarizing and paraphrase – Error Detection – Spelling Test – Sentence Improvement - Preposition	[6]
Total Hours	**30**

Reference(s):

1. 'English for Engineers & Technologists' Orient Blackswan Private Ltd. Department of English, Anna University, 2020
2. Norman Lewis, 'Word Power Made Easy - The Complete Handbook for Building a Superior Vocabulary Book', Penguin Random House India, 2020
3. Michael McCarthy and Felicity O Dell, 'English Vocabulary in Use: Upper Intermediate', Cambridge University Press, N.York, 2012
4. Lakshmi Narayanan, 'A Course Book on Technical English' Scitech Publications (India) Pvt. Ltd. 2020

*** SDG- 04- Quality Education**

Course Designer(s)

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

Passed in BoS Meeting held on 22/12/2022
Approved in Academic Council Meeting held on 07/01/2023

BoS Chairman
Head of the Department
Department of Textile Technology
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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 2023-2024)
SEMESTER III

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	60 MA 011	Optimization Techniques and Numerical Methods	BS	5	3	1	0	4
2.	60 ME 008	Elements of Mechanical Engineering	ES	5	3	1	0	4
3.	60 TT 301	Structure and Properties of Fibers	PC	5	3	1	0	4
4.	60 TT 302	Yarn Manufacturing Technology I	PC	3	3	0	0	3
5.	60 TT 303	Fabric Manufacturing Technology I	PC	3	3	0	0	3
PRACTICALS								
6.	60 TT 3P1	Fibre Science Laboratory	PC	4	0	0	4	2
7.	60 TT 3P2	Yarn Manufacturing Technology Laboratory I	PC	4	0	0	4	2
8.	60 CG 0P2	Career Skill Development II	CG	2	0	0	2	1*
9.	60 CG 0P6	Internship	CG	-	-	-	-	1/2/3*
				31	**15**	**3**	**10**	**22**

Passed in BoS Meeting held on 22/12/2023
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K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215
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B.E. / B.Tech. Degree Programme

SCHEME OF EXAMINATIONS
(For the candidates admitted in 2023-2024)

THIRD SEMESTER

S.No.	Course Code	Name of the Course	Duration of Internal Exam	Weightage of Marks			Minimum Marks for Pass in End Semester Exam	
				Continuous Assessment *	End Semester Exam **	Max. Marks	End Semester Exam	Total
THEORY								
1.	60 MA 011	Optimization Techniques and Numerical Methods	2	40	60	100	45	100
2.	60 ME 008	Elements of Mechanical Engineering	2	40	60	100	45	100
3.	60 TT 301	Structure and Properties of Fibers	2	40	60	100	45	100
4.	60 TT 302	Yarn Manufacturing Technology I	2	40	60	100	45	100
5.	60 TT 303	Fabric Manufacturing Technology I	2	40	60	100	45	100
PRACTICAL								
6.	60 TT 3P1	Fibre Science Laboratory	3	60	40	100	45	100
7.	60 TT 3P2	Yarn Manufacturing Technology Laboratory I	3	60	40	100	45	100
8.	60 CG 0P2	Career Skill Development II	3	100	-	100	-	100
9	60 CG 0P6	Internship	CG	100	-	100	-	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 examinations and 40 marks for the practical end semester examination.

Passed in BoS Meeting held on 22/12/2023
Approved in Academic Council Meeting held on 07/01/2023

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TIRUCHENGODE-637 215

60 MA 011	OPTIMIZATION TECHNIQUES AND NUMERICAL METHODS	Category	L	T	P	Credit
		BS	3	1	0	4

Objectives

- To familiarize basic concepts of linear programming problems.
- To get exposed to transportation and assignment problems.
- To know about sequencing and replacement problems.
- To get exposed to various techniques to solve equations numerically.
- To know the concepts of interpolation and numerical integration.

Pre-requisites

NIL

Course Outcomes

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

CO1	Formulate the linear programming models and solve by simplex algorithms	Apply
CO2	Apply the suitable method to predict the optimum solution for transportation and assignment problems	Apply
CO3	Determine the optimal order in which n jobs can be processed and optimal replacement policy for machineries	Apply
CO4	Apply various iteration techniques for solving algebraic, transcendental and system of linear equations.	Apply
CO5	Apply different techniques to find the intermediate values and to evaluate single definite integrals.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO2	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO3	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO4	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO5	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	10	10	10
Understand	10	10	20
Apply	40	40	70
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	**60**	**60**	**100**

Passed in BoS Meeting held on 22/12/2023
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BoS Chairman
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K S Rangasamy College of Technology
TIRUCHENGODE-637 215

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 MA 011- Optimization Techniques and Numerical Methods

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
III	3	1	0	60	4	40	60	100

Linear Programming Problems* Formulation of Linear programming problem -Graphical method - Simplex method - Big-M method – Duality. **Hands - on:** Optimum solution for LPP in two variables graphically	[9]
Transportation and Assignment Problems** Transportation problem - North-west corner rule - Least cost method - Vogel's approximation method - MODI method* - Assignment problem - Balanced and unbalanced assignment problems. **Hands - on:** Compute the initial basic feasible solution for transportation problem	[9]
Sequencing and Replacement Problems*** Processing n jobs on 2 machines - Processing n jobs on 3 machines - Processing n jobs on m machines. Replacement problem- Individual replacement - Group replacement. **Hands - on:** Determine the optimum sequence for sequencing problem	[9]
Solution of Equations and Eigenvalue problem Algebraic and Transcendental equations - Newton Raphson method – Regula Falsi method - Gauss elimination method – Gauss Jordan method – Iterative methods: Gauss Jacobi method – Gauss Seidel method– Eigen value of a matrix by Power method. **Hands - on:** Deduce the solution of transcendental equations	[9]
Interpolation and Numerical Integration Lagrange's and Newton's divided difference interpolation (unequal intervals) - Newton's forward and backward interpolation (equal intervals) - Two point and three point Gaussian quadrature – Trapezoidal, Simpson's 1/3 and 3/8 rule (single integral). **Hands - on:** Evaluation of definite single integral	[9]
Total Hours: 45 + 15 (Tutorial)	**60**

Text Book(s):

1. Kanti Swarup, Gupta P.K., Man Mohan, "Operations Research", 20th Edition, Sultan Chand & Sons, New Delhi, 2022
2. Grewal B.S and Grewal J.S, "Numerical methods in Engineering and Science", 10th Edition, Khanna Publishers, New Delhi, 2015.

Reference(s):

1. Sundaresan V, Ganapathy Subramanian K.S., Ganesan K., "Resource Management Techniques", 11th Edition, ARS Publications, Chennai, 2019
2. Taha.H.A, "Operations Research: An Introduction", Pearson Education Edition, Asia, 10th Edition, New Delhi, 2017
3. Kandasam P, Thilagavathy K and Gunavathi K, "Numerical Methods", 3rd Edition, S.Chand & Company Ltd, New Delhi, 2013.
4. Gerald C.F and Wheatley P.O, "Applied Numerical Analysis", 7th Edition, Pearson Education Asia, New Delhi, 2004.

**SDG 4 – Quality Education

***SDG 9 – Industry, Innovation and Infrastructure

*SDG 12 – Ensure sustainable consumption and production patterns

Passed in BoS Meeting held on 22/12/2023
Approved in Academic Council Meeting held on 07/01/2023

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.	Topics	No. of hours
1	**Linear Programming Problems**	
1.1	**Formulation of linear programming problem**	1
1.2	Graphical method	2
1.3	Simplex method	2
1.4	Big-M method	2
1.5	Duality	2
1.6	**Tutorial**	2
1.7	**Hands-on**	1
2	**Transportation and Assignment Problems**	
2.1	**Transportation problem- North-west corner rule and Least cost method**	2
2.2	Vogel's approximation method	1
2.3	MODI method	3
2.4	Balanced assignment problem	2
2.5	Unbalanced assignment problem	1
2.6	Tutorial	2
2.7	Hands-on	1
3	**Sequencing and Replacement Problems**	
3.1	**Processing n jobs on 2 machines**	2
3.2	**Processing n jobs on 3 machines**	2
3.3	Processing n jobs on m machines	1
3.4	Replacement problem - Individual replacement	2
3.5	Group replacement	2
3.6	Tutorial	2
3.7	Hands-on	1
4	**Solution of Equations and Eigenvalue Problem**	
4.1	Algebraic and Transcendental equations and Newton Raphson method	2
4.2	Regula-Falsi method	1
4.3	Gauss elimination method	1
4.4	Gauss Jordan method	1
4.5	Gauss Jacobi and Gauss Seidel method	2
4.6	Eigen values of a matrix by Power method	2
4.7	Tutorial	2
4.8	Hands-on	1
5	**Interpolation and Numerical Integration**	
5.1	Lagrange's interpolation	2
5.2	Newton's divided difference interpolation	1
5.3	Newton's forward interpolation	2
5.4	Newton's backward interpolation	1
5.5	Two and three point Gaussian quadrature	1
5.6	Single integral using Trapezoidal, Simpson's 1/3 and 3/8 rule	2
5.7	Tutorial	2
5.8	Hands-on	1

Course Designer(s)

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

Passed in BoS Meeting held on 22/12/2023
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60 ME 008	Elements of Mechanical Engineering	Category	L	T	P	Credit
		ES	3	1	0	4

Objectives

- Learn the basic components and layout of linkages in the assembly of a system machine.
- Gain basic knowledge of the strength of materials and power transmissions essential for understanding textile machinery.
- Highlight basic properties of steam and functions of steam boilers used in textile industries.
- Understand the basic functions of pumps and hydraulic devices used in textile industry processes.
- Utilize various air compressors, clutches, and brakes used in automobiles

Pre-requisites

NIL

Course Outcomes

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

CO1	Design and construct the various cam profile and follower using various follower motions.	Analyse
CO2	Describe the concepts of stresses and strains, their significant effects in engineering applications.	Analyse
CO3	Select and design the appropriate power transmission drives for various requirements	Analyse
CO4	Explain the properties of steam and different kind of steam boilers.	Apply
CO5	Explain the working principles of pumps, hydraulic devices, air compressors, clutches and brakes.	Apply

Mapping with Programme Outcomes

COs	POs										PSOs				
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	3	-	-	-	-	-	-	-	-	-	2	-	2
CO2	3	3	3	-	-	-	-	-	-	-	-	-	3	-	2
CO3	3	3	3	-	-	-	-	-	-	-	-	-	3	-	2
CO4	3	3	3	-	-	-	-	-	-	-	-	-	2	-	2
CO5	3	3	3	-	-	-	-	-	-	-	-	-	3	-	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 ME 008 - Elements of Mechanical Engineering								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
III	3	1	0	60	4	40	60	100

BASICS OF MECHANISMS Basic concepts of Link, Pair, Machine and Structure- Degree of freedom – Grashoff's law – Inversion of 4-bar and single slider crank mechanisms. Cams: Types of cams and followers – Motions of the follower: Simple, Harmonic and Cycloidal motion.	[9]
STRENGTH OF MATERIALS Basics of strength of materials: Simple stresses and strains in a bar – Poisson's ratio – Elastic Moduli – Thermal stress and strain. Torsion of solid, hollow circular shafts and Stepped shafts – Power transmission, strength and stiffness of shafts. Leaf spring – Stresses and deflection in close coiled helical spring.	[9]
POWER TRANSMISSION DRIVES Belt drives: Flat belts and V-belts – types of belt drives –velocity ratio of belt drive – ratio of tensions – length and power transmitted by a belt. Gear drive: Types of gears – Spur, Helical, Bevel and Worm gears – Types of gear trains – Simple and compound gear trains	[9]
PROPERTIES OF STEAM AND STEAM BOILERS * Formation of steam – Temperature vs. Enthalpy diagram (T-H diagram) – wet steam, saturated steam and superheated steam – dryness fraction, wetness fraction, specific volume, enthalpy and internal energy of steam – Use of steam tables. Boilers: Classification – Fire tube and Water tube boilers – Cochran boiler, Lancashire boiler, Babcock and Wilcox boiler – Boiler mountings and accessories – Applications of steam boilers.	[9]
PUMPS, HYDRAULIC DEVICES, CLUTCHES AND BRAKES * Pumps: Classification – Components and working of Reciprocating and Centrifugal pumps. Hydraulic devices: Working of Hydraulic press and Hydraulic lift – Air compressors. Clutches and brakes: Types– Construction and working principle – Applications	[9]
Total Hours: 45 + 15 (Tutorial)	**60**

Text Book(s):	
1.	S. Trymbaka Murthy, "Elements of Mechanical Engineering", 5th Edition, I. K. International Pvt. Ltd, 2019.J.K.Kittur, G.D
2.	Gokak, "Elements of Mechanical Engineering", Wiley Publications, 2016.
Reference(s):	
1.	R.K.Rajput, "Elements of Mechanical Engineering", Firewall Media, 2017.
2.	Rattan.S.S, "Theory of Machines",Tata McGraw Hill, 2019.
3.	Pravin Kumar, "Basic Mechanical Engineering", Second Edition, Pearson India Education, 2017
4.	V.Ganesan, "Internal Combustion Engines",Tata McGraw Hill Education, 2014.

*SDG 9 Industry, Innovation, and Infrastructure

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**BASICS OF MECHANISMS**	
1.1	Classification of mechanisms	1
1.2	Basic kinematic concepts and definitions –	1
1.3	Degree of freedom	1
1.4	Inversion of 4-bar and single slider crank mechanisms	1
1.5	Cams – Types of cams & followers,	1
1.6	Motions of the follower – Simple Harmonic Motion	2
1.7	Cycloidal motion	2
1.8	Draw the cam profile (axis and offset)	
2.0	**STRENGTH OF MATERIALS**	
2.1	Simple stresses and strains in a bar	2
2.2	Poisson's ratio – Elastic Moduli – Thermal stress and strain.	2
2.3	Torsion of solid, hollow circular shafts and Stepped shafts	1
2.4	Power transmission, strength and stiffness of shafts.	2
2.5	Leaf spring – Stresses and deflection in close coiled helical spring.	2
4.0	**PROPERTIES OF STEAM AND STEAM BOILERS**	
4.1	Formation of steam – Temperature vs. Enthalpy diagram (T-H diagram)	2
4.2	Wet steam, saturated steam and superheated steam	1
4.3	dryness fraction, wetness fraction, specific volume	1
4.4	enthalpy and internal energy of steam	2
4.5	Boilers: Classification – Fire tube and Water tube boilers	2
4.6	Cochran boiler, Lancashire boiler, Babcock and Wilcox boiler	1
4.7	Boiler mountings and accessories	1
4.8	Applications of steam boilers.	1
5.0	**PUMPS, HYDRAULIC DEVICES, CLUTCHES AND BRAKES**	
5.1	Classification – Components and working of Reciprocating and Centrifugal pumps	1
5.2	Hydraulic devices: Working of Hydraulic press and Hydraulic lift	2
5.3	Air compressors	2
5.4	Clutches and brakes Types – Construction	1
5.5	Clutches and brakes working principle – Applications	2

Course Designer(s)

1. Mr.U.Vivek – viveku@ksrct.ac.in
2. Dr.K.Mohan – mohank@ksrct.ac.in

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TIRUCHENGODE-637 215

60 TT 301	Structure and Properties of Fibers	Category	L	T	P	Credit
		PC	3	1	0	4

Objectives

- To expose the students to the various methods in structural investigation of fibers.
- To enable the students to understand the moisture absorption properties of fibers.
- To enable the students to understand the mechanical properties of fibers.
- To enable the students to understand the optical and frictional properties of fibers.
- To enable the students to understand the thermal and electrical properties of fibers.

Pre-requisites

60 TT 201

Course Outcomes

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

CO1	Examine the different methods in the investigation of fibres	Understand
CO2	Describe the moisture absorption properties of fibres.	Understand
CO3	Discuss the concepts of mechanical properties of fibres.	Understand
CO4	State the optical and frictional properties of fibres.	Understand
CO5	Interpret the thermal and electrical properties of fibres	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	1	2	2	-	1	-	-	2	-	2	3	3	1
CO2	3	2	1	2	2	-	1	-	-	2	-	1	3	3	1
CO3	3	2	1	2	2	-	1	-	-	2	-	1	3	3	1
CO4	3	2	1	2	2	-	1	-	-	2	-	1	3	3	1
CO5	3	2	1	2	2	-	1	-	-	2	-	1	3	3	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

60 TT 301 – Structure and properties of Fibres

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
III	3	1	0	60	4	40	60	100

Structural Investigation of Fibres Basic requirements for fibre formation; Models of fibre structure-fringed micelle, fringed fibril and fringed lamellar models. Investigation of fibre structure by X-ray diffraction, SEM, TEM, STEM, FTIR and NMR.	[9+3]
Moisture Absorption Properties of Fibres Definitions- humidity, relative humidity, standard testing atmosphere, moisture content and regain; hysteresis in moisture absorption; moisture absorption behaviour of textile fibres; Influence of various factors on regain; absorption in crystalline and amorphous regions. Density gradient column Heats of sorption-Integral and differential, measurement, effects of heats of sorption; Conditioning of fibres, mechanism of conditioning, factors influencing the rate of conditioning; swelling of fibres, types of swelling and its measurement.	[9+3]
Mechanical Properties of Fibres* Tensile property- definitions related to tensile property; stress strain curves of various textile fibres and its importance, influence of moisture and temperature on tensile characteristics, Weak- link effect. Introduction to dynamic mechanical properties. Elastic recovery and its relation to stress and strain of various textile fibres; Mechanical conditioning of fibres. Time dependent effects- creep and stress relaxation phenomena; Directional effects – Brief study on flexural and torsional rigidity of fibres Compression and shear properties	[9+3]
Optical and Frictional Properties of Fibres* Optical property - Refractive index and its measurement; Birefringence and its measurement; Absorption and dichroism; reflection and lustre of fibres. Frictional property - Amonton's and Bowden's law of friction, various influencing factors- load, area of contact, speed of sliding, state of surface and regain; directional frictional effect of wool.	[9+3]
Thermal and Electrical Properties of Fibres* Thermal property- structural changes in fibres on heating, thermal transitions and melting; heat setting of fibres and its importance. Electrical property- mass specific resistance; influence of moisture, temperature and impurities on resistance; Dielectric properties- factors influencing dielectric properties of fibre; Static electricity – Theory of static charge generation, problems and elimination techniques.	[9+3]
Total hours	**60**

Text Book(s):

1. Morton W.E. and Hearle J.W.S., "Physical properties of textile fibres", published by The Textile Institute Manchester,U.K., 4th Edition, 2008.ISBN 978-1-84569-220-9.
2. Meredith R. and Hearle J.W.S., "Physical methods of investigation of textiles", Wiley Publications, Newyork, 1989.

Reference(s):

1. Meredith R., "Mechanical Properties of Textile Fibres", North Holland, Amsterdam, 1986.
2. Mukhopadhyay S.K., "Advances in fibre science", The Textile Institute, Manchester, U.K., 1992.
3. Gordon cook. J,"Hand book of textile fibres –Vol.I - Natural fibers", Wood Head Publishing Limited, Cambridge- England, 2006
4. Sreenivasa Murthy.H.V, "Introduction to Textile Fibers", Revised Edition, Wood Head Publishing India Private Limited, New Delhi.

*SDG 12: Responsible Consumption and Production

Passed in BoS Meeting held on 22/12/2023
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Head of the Department
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K S Rangasamy College of Technology
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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Structural Investigation of Fibres**	
1.1	Basic requirements for fibre formation	1
1.2	Fringed micelle Model	1
1.3	Fringed Fibril Model	1
1.4	Fringed lamellar Model	1
1.5	X-Ray Diffraction metho	1
1.6	SEM	1
1.7	TEM	1
1.8	STEM	1
1.9	FTIR NMR	1
	Tutorial	3
2.0	**Moisture Absorption Properties of Fibres**	
2.1	Definitions- humidity, relative humidity, standard testing atmosphere	1
2.2	Moisture content and regain; hysteresis in moisture absorption	2
2.3	Moisture absorption behavior of textile fibres	1
2.4	Influence of various factors on regain	1
2.5	Absorption in crystalline and amorphous regions	1
2.6	Density gradient column	1
2.7	Heats of sorption-Integral and differential	1
2.8	Measurement, effects of heats of sorption & Factors influencing the rate of conditioning	1
2.9	Conditioning of fibres and Mechanism of conditioning & Swelling of fibres, types of swelling and its measurement.	1
	Tutorial	4
3.0	**Mechanical Properties of Fibres**	
3.1	Definitions related to tensile property;	1
3.2	Stress strain curves of various textile fibres and its importance	2
3.3	Influence of moisture and temperature on tensile characteristics	1
3.4	Weak- link effect	1
3.5	Introduction to dynamic mechanical properties.	1
3.4	Elastic recovery and its relation to stress and strain of various textile fibres	2
3.5	Mechanical conditioning of fibres	1
3.6	Time dependent effects- creep and stress relaxation phenomena	2
3.7	Brief study on flexural and torsional rigidity of fibres.	2
3.8	Compression and shear properties	1
	Tutorial	3
4.0	**Optical and Frictional Properties of Fibres**	
4.1	Optical property - Refractive index and its measurement	2
4.2	Birefringence and its measurement	2
4.3	Absorption and dichroism	1
4.4	Reflection and lustre of fibres	2
4.5	Amonton's and Bowden's law of friction	1
4.6	Various influencing factors- load, area of contact, speed of sliding, state of surface and regain	2

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4.7	Directional frictional effect of wool.	2
	Tutorial	3
5.0	**Thermal and Electrical Properties of Fibres**	
5.1	Thermal property- structural changes in fibres on heating	1
5.2	Thermal transitions and melting	2
5.3	Heat setting of fibres and its importance	1
5.4	Electrical property- mass specific resistance	2
5.5	Influence of moisture, temperature and impurities on resistance	2
5.6	Dielectric properties-factors influencing dielectric properties	2
5.7	Static electricity – Theory of static charge generation.	1
5.8	Problems and elimination techniques for Static Electricity	1
	Tutorial	3

Course Designer(s)

1. Mr. G.Devanand – devanandg@ksrct.ac.in

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BoS Chairman
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TIRUCHENGODE-637 215

60 TT 302	Yarn Manufacturing Technology I	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- To understand the criterion for selection of Cotton thro openers and cleaners
- To learn about the functions, operations and setting of spinning machines
- To evaluate the end product of each machine in terms of feed parameters of successive machine
- To select the process parameters in relation to feed material
- To understand the need and scope of modern developments in spinning machines

Pre-requisites

60 TT 201
60 TT 301

Course Outcomes

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

CO1	Explain the objectives, principles, and working of ginning and blow room process and carry out production calculations.	Understand
CO2	Describe the objective, principle and working of carding machine, process parameters and production calculations.	Understand
CO3	Explain the principle, objectives and process of drawing and carryout production calculations	Understand
CO4	Describe the need for combing preparatory and working of comber machine, process parameters and production calculations.	Understand
CO5	Explain the objective, principle and working of speed frame and carryout draft, twist and production calculations.	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1	-	-	-	-	-	-	-	-	-	-	3	3	1
CO2	3	1	-	-	-	-	-	-	-	-	-	-	3	3	1
CO3	3	3	-	-	-	-	-	-	-	-	-	-	3	3	1
CO4	3	3	-	-	-	-	-	-	-	-	-	-	3	3	1
CO5	3	3	-	-	-	-	-	-	-	-	-	-	3	3	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	10	10	50
Understand	50	50	50
Apply	-	-	-
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	**60**	**60**	**100**

Passed in BoS Meeting held on 22/12/2023
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Head of the Department
Department of Textile Technology
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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
60 TT 302 - Yarn Manufacturing Technology I								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
III	3	0	0	45	3	40	60	100

Introduction - Ginning and Blow room Contamination and types of Contamination in Cotton, Selection of Cotton for spinning (basic requirements),Bale Management. **Ginning**: Types, criterion for selection , Process parameters and assessment. **Mixing:** Need , methods of mixing ,Blending Vs Mixing , types of equipment's, selection , evaluation of performance. **Openers and Cleaners**: Study of Minor and Major Cleaning points, Principle, working , evaluation of performance **Modern Developments**: Need and scope, Chute feed to Card, Latest Blow room machines and their selection criterion Production calculations of above machines	[9]
Carding Objectives and zones , principle and functions of each zone, settings for different types of fibres, Card clothing and grinding -its impact on quality, Need or Autoleveller in Card-Features of Modern Cards and their selection, Improvement in quality- Production calculations	[9]
Drawing* Objectives, zones of drafting, Concept of ideal draft, types of drafting systems, principle and working of drawframe, Roller setting , weighing , significance of trash in draw frame sliver , stop motions, , Production calculations, Need for latest developments and performance evaluation – Production Calculations	[9]
Combing* Need, types and selection of Comber Preparatory, role of Precomb draft, Principle and working of Comber, setting, Developments in Comber Preparatory and performance evaluation - Production calculations.	[9]
Speed Frame* Principle and working of speed frame, Various elements and their significance, types of drafting system -, Mechanism of winding and bobbin building (mechanical and electro mechanical), Stop motions; Latest developments in speed frame, Production Calculations.	[9]
Total hours	**45**

Text Book(s):	
1.	KleinW., Vol. 2,"Apracticalguide to Openingand Carding", The Textile Institute,Manchester, U.K., 2000.
2	KleinW., Vol. 3, "Apractical guide to Combing and Drawing", The TextileInstitute, Manchester, U.K., 1987.
Reference(s):	
1.	KleinW., Vol. 1, "The TechnologyofShort-Staple Spinning", TheTextile Institute, Manchester, U.K.,1998.
2.	ChattopadhyayR,SalhotraK.R,"Spinning:Blowroom,Carding",NCUTE Publications,1998.
3.	ChattopadhyayR, RangasamyR, "Spinning:Drawing, Combing&Roving",NCUTEPublications,1999.
4.	PattabhiramanT.K,"Essential FactsofPracticalCottonSpinning",MahajanPublishers,Ahmedabad,2005.

*SDG 9: Industry, Innovation, and Infrastructure

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Introduction – Ginning and Blow room**	
1.1	Contamination and types of Contamination in Cotton, Selection of Cotton for spinning	1
1.2	Bale Management, Ginning – Objectives and Types	1
1.3	Working of different types of ginning machines.	1
1.4	Mixing: Need , methods of mixing, Blending Vs Mixing, types of equipments	1
1.5	Selection of mixing machineries, Principle and Objectives of blow room	1
1.6	Openers and Cleaners: Study of various blow room machineries.	2
1.7	Modern Developments: Need and scope, Chute feed to Card,	1
1.8	Production calculations of blow room.	1
2.0	**Carding**	
2.1	Objectives and zones	1
2.2	Principle and functions of each zone	2
2.3	Settings for different types of fibres	1
2.4	Card clothing and grinding - its impact on quality	1
2.5	Need or Autoleveller in Card	1
2.6	Features of Modern Cards and their selection	1
2.7	Improvement in quality	1
2.8	Production calculations	1
3.0	**Drawing**	
3.1	Objectives, zones of drafting	1
3.2	Concept of ideal draft, types of drafting systems	2
3.3	Principle and working of draw frame	1
3.4	Roller setting and draft distribution	1
3.5	Roller weighing systems	1
3.6	Sliver stop motions	1
3.7	Need for latest developments and performance evaluation	1
3.8	Production Calculations	1
4.0	**Combing**	
4.1	Need for Combing	1
4.2	Types and selection of Comber Preparatory	2
4.3	Role of Precomb draft	1
4.4	Principle and working of Comber	2
4.5	Settings of Comber	1
4.6	Developments in Comber Preparatory and performance evaluation	1
4.7	Production calculations	1
5.0	**Speed Frame**	
5.1	Principle and working of speed frame	1
5.2	Various elements and their significance	2
5.3	Types of drafting system	1
5.4	Mechanism of winding and bobbin building	2
5.5	Stop motions	1
5.6	Latest developments in speed frame	1
5.7	Production Calculations	1

Course Designer(s)

1 A.S. Subburaayasaran: : subburaayasaran@ksrct.ac.in

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60 TT 303	Fabric Manufacturing Technology I	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- Sequence of operation in warp and weft yarn preparation.
- Objectives and principle of preparation of warp winding.
- Objectives and principle of preparation of pirn winding.
- Objectives and principle of preparation of warping.
- Objectives and principle of preparation of sizing and drawing-in.

Pre-requisites

Nil

Course Outcomes

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

CO1	State the sequence of weaving preparatory processes and classification of winding machines	Understand
CO2	Explain the working principles of various types of winding machines and their production calculation.	Remember
CO3	Describe principle and working of weft winding machines and their production calculation.	Understand
CO4	Explain principle and working of various warping machines and their defects and remedies.	Remember
CO5	Explain the objectives and working principles of sizing machines and drawing –in	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	-	2	-	-	-	-	-	-	-	-	-	3	3	1
CO2	2	-	2	-	-	-	-	-	-	-	-	-	3	3	1
CO3	2	-	3	-	-	-	-	-	-	-	-	-	3	3	1
CO4	3	-	3	-	-	-	-	-	-	-	-	-	3	3	1
CO5	2	-	3	-	-	-	-	-	-	-	-	-	3	3	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 22/12/2023
Approved in Academic Council Meeting held on 07/01/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 TT 303 - Fabric Manufacturing Technology I

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
III	3	0	0	45	3	40	60	100

Introduction Sequence of operation in warp and weft preparation. Various types of woven fabrics - plain, stripes, checked, dyed, printed and denim; Different types of supply packages; Winding - angle of wind, angle of cone, traverse ratio; classification of winding machines and yarn faults and its removal; characteristics of parallel winding, cross winding and precision winding.	[9]
Warp Winding Objects of winding; principles of random and precision winders; working of conventional and modern cone and cheese winding machines; production of Bi-conical packages; Function of various parts – tension devices, slub catchers, stop motions, types of drum - half accelerated and fully accelerated drums, anti-patterning devices, anti-ballooning devices. Concepts in yarn clearing – mechanical, optical and electronic yarn clearers; knotters and splicers, clearing efficiency. Air requirements for modern winding machines. Calculations based on winding parameters.	[9]
Pirn Winding Objects and principles of pirn winding; Types of pirn winding machine - modern automatic pirn winders, function of parts. Production calculations in cone, cheese and pirn winding machines. Winding of synthetic and blended yarns, Yarn preparation for hosiery process; Package preparation for dyeing; Winding package faults and remedies - cone, cheese and pirn winding.	[9]
Warping Warping - Objectives; classification of warping machines; working principle of beam warping machine- creel types, stop motion, length measuring motion; working principle of sectional warping machine- creel, stop motion, length measuring motion. Ball warping and draw warping; Features of modern warping machines; Warping defects -causes and remedies; production calculations in warping machine.	[9]
Sizing & Drawing – In Sizing -Objectives of sizing, sizing ingredients and recipe for various fibres, size paste preparation. Types of sizing machines and its function; marking and measuring motion; Concept of single end sizing. Sizing of blended and filament yarns. Modern developments in sizing. Cold and pre wet sizing; Sizing defects- causes and remedies; Production calculations in Sizing. **Drawing –in** - Needs and methods of drawing-in process, leasing, knotting and pinning machines. Selection and care of reeds, healds and drop pins; control of cross ends and extra ends.	[9]
Total hours	**45**

Text Book(s):

1.	Lord P.R and Mohamed M.H, "Weaving conversion of yarn to fabric", Wood head Publishers Ltd UK,reprint, 1992, ISBW: 090409538X.
2.	"Woven fabric production – I", Quality CBT & course material from NCUTE, 2002.
3.	Ajgaonkar D.B., Talukdar M.K. and Wedekar, "Sizing: Material Methods and Machineries", Mahajan Publications, Ahmedabad, 1999.
4.	Mukesh Kumar Singh, "Industrial Practices in Weaving Preparatory", WPI Publishers,UK, 2014.

Reference(s):

1.	Sengupta, "Weaving Calculation", D.P. Taraporewala Sons & Co. Ltd., reprint, 1996.
2.	Ormerod A, "Modern Preparation and Weaving", Wood head Publishers Ltd UK, reprint, 2004.
3.	Talukdar M.K., "An Introduction to Winding and Warping" Testing Trade Press, Mumbai, 1998.
4.	Marks R. and Robinson T.C., "Principles of Weaving", The Textile Institute, Manchester, 1989, ISBN: 0900739 258

Passed in BoS Meeting held on 22/12/2023
Approved in Academic Council Meeting held on 07/01/2023

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.	**Topic**	**No. of hours**
1.0	**Introduction**	
1.1	Sequence of operation in warp and weft preparation.	1
1.2	Various types of woven fabrics - plain, stripes, checked, dyed, printed and denim	1
1.3	Different types of supply packages; Winding - angle of wind, angle of cone, traverse ratio	1
1.4	Classification of winding machines and yarn faults and its removal	1
1.5	Characteristics of parallel winding, cross winding and precision winding	2
2.0	**Warp Winding**	
2.1	Objects of winding	1
2.2	Principles of random and precision winders	1
2.3	Working of conventional and modern cone and cheese winding machines	1
2.4	Production of Bi-conical packages	1
2.5	Function of various parts – tension devices, slub catchers, stop motions	1
2.6	Types of drum - half accelerated and fully accelerated drums	1
2.7	Anti-patterning devices, anti-ballooning devices	1
2.8	Concepts in yarn clearing – mechanical, optical and electronic yarn clearers	1
2.9	Knotters and splicers, clearing efficiency	1
2.10	Calculations based on winding parameters	1
3.0	**Pirn Winding**	
3.1	Objects and principles of pirn winding	1
3.2	Types of pirn winding machine - modern automatic pirn winders	2
3.3	Production calculations in cone, cheese and pirn winding machines	1
3.4	Winding of synthetic and blended yarns	1
3.5	Yarn preparation for hosiery process	1
3.6	Package preparation for dyeing	1
3.7	Winding package faults and remedies - cone, cheese and pirn winding	2
4.0	**Warping**	
4.1	Warping - Objectives; classification of warping machines	1
4.2	working principle of beam warping machine	1
4.3	Creel types, stop motion, length measuring motion	1
4.4	working principle of sectional warping machine- creel, stop motion, length measuring motion	2
4.5	Ball warping and draw warping	1
4.6	Features of modern warping machines	1
4.7	Warping defects -causes and remedies	1
4.8	Production calculations in warping machine	2
5.0	**Sizing & Drawing – In**	
5.1	Sizing -Objectives of sizing	1
5.2	sizing ingredients and recipe for various fibres, size paste preparation	1
5.3	Types of sizing machines and its function marking and measuring motion	1
5.4	Concept of single end sizing	1
5.5	Sizing of blended and filament yarns & Modern developments in sizing	1
5.6	Cold and pre wet sizing	1
5.7	Sizing defects- causes and remedies	1
5.8	Production calculations in Sizing	1
5.9	Needs and methods of drawing-in process, leasing, knotting and pinning machines	1
5.10	Selection and care of reeds, healds and drop pins	1

Course Designer(s)

1. Mr. M.Arunkumar : arunkumar@ksrct.ac.in

Passed in BoS Meeting held on 22/12/2023
Approved in Academic Council Meeting held on 07/01/2023

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Head of the Department
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TIRUCHENGODE-637 215

60 TT 3P1	Fibre Science Laboratory	Category	L	T	P	Credit
		PC	0	0	4	2

Objectives

- To impart knowledge on identification of fibres by physical test.
- To impart knowledge on determination of fibre density.
- To impart knowledge on determination of moisture regain and moisture content.
- To impart knowledge on blending of fibres
- To impart knowledge on analysis of fibre structures

Pre-requisites

- Nil

Course Outcomes

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

CO1	Analyse the given fibre by feeling, burning solubility test and using microscope to identify the textile fibres	Analyse
CO2	Analyse the maturity, wax content of cotton fibre and the denier of synthetic fibres.	Analyse
CO3	Analyse the density, moisture regain, moisture content and spin finish of fibres	Analyse
CO4	Analyse the blend proportion of different blends	Analyse
CO5	Analyse the structure of fibres by various techniques	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	-	3	-	-	-	-	-	2	-	-	2	3	3	3
CO2	2	-	3	-	-	-	-	-	2	-	-	2	3	3	3
CO3	2	-	3	-	-	-	-	-	2	-	-	2	3	3	3
CO4	2	-	3	-	-	-	-	-	2	-	-	2	3	3	3
CO5	3	-	3	-	-	-	-	-	2	-	-	2	3	3	3
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

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

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT 3P1 - Fibre Science Laboratory								
Semester	**Hours/Week**			**Total Hrs**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
III	0	0	4	60	2	60	40	100

List of Experiments:

1. Identification of fibres by feel and microscopic view.*
   - Natural cellulose & protein fibres
   - Regenerated cellulose fibres
   - Polyamide fibres & Polyester fibres
2. Identification of fibres by flaming characteristics (Burning test).*
   - Natural cellulose & protein fibres
   - Regenerated cellulose fibres
   - Polyamide fibres & Polyester fibres
3. Identification of fibers by solubility tests.*
   - Natural cellulose & protein fibres
   - Regenerated cellulose fibres
   - Polyamide fibres & Polyester fibres
4. Determination of fibre maturity using caustic soda swelling method.*
5. Determination of wax content of the cotton fibres*.
6. Determination of denier of synthetic fibres by gravimetric method.*
7. Determination of density of various fibres by density gradient column*.
8. Determination of moisture regain and moisture content of fibers.*
9. Estimation of percentage of spin finishes in synthetic fibers through Soxhlet extraction.*
10. Determination of blend proportion of P/C blends by solubility method.*
11. Determination of blend proportion of C/V blends by solubility method.*
12. Determination of blend proportion of P/V blends by solubility method.*
13. Determination of blend proportion of P/W blends by solubility method.*

Design Experiments:

14. Thermo gravimetric analysis of fibres using thermo grams.*
15. FTIR analysis of polymers and fibres from spectrum

Lab Manual

1. "Fibre Science Laboratory", Department of Textile Technology, KSRCT.

*SDG:12 (Responsible Consumption and Production)-

Course Designer(s)

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

Passed in BoS Meeting held on 22/12/2023
Approved in Academic Council Meeting held on 07/01/2023

BoS Chairman
Head of the Department
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TIRUCHENGODE-637 215

60 TT 3P2	Yarn Manufacturing Technology Laboratory I	Category	L	T	P	Credit
		PC	0	0	4	2

Objectives

- To provide the knowledge of basic machineries of Blow room
- To understand the principles involved in processing fibers thro Carding
- To analyze the process of Drawing
- To provide the knowledge about Speed frame process.
- To provide the knowledge for selection machinery with respect to the material

Pre-requisites

- Nil

Course Outcomes

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

CO1	Explain the ginning machine's material passage and carryout speed calculations	Apply
CO2	Discuss the material passage through blow room and carryout its production calculations	Apply
CO3	Explain the material passage in carding, assess the setting between various parts and carryout speed, draft and production calculations.	Apply
CO4	Discuss the material passage through draw frame and carryout its production calculations	Apply
CO5	Explain the material passage in speed frame and carryout speed, draft, twist and production calculations.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	-	3	-	-	-	-	-	2	-	-	2	3	3	3
CO2	2	-	3	-	-	-	-	-	2	-	-	2	3	3	3
CO3	2	-	3	-	-	-	-	-	2	-	-	2	3	3	3
CO4	2	-	3	-	-	-	-	-	2	-	-	2	3	3	3
CO5	3	-	3	-	-	-	-	-	2	-	-	2	3	3	3
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 22/12/2023
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TIRUCHENGODE-637 215

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT 3P2 - Yarn Manufacturing Technology Laboratory I								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
III	0	0	4	60	2	60	40	100

List of Experiments:

1. Passage of material through Ginning machine and calculation of its speeds.
2. Passage of material through blow room and study of its settings.
3. Calculation of speeds and production in Blended Scutcher
4. Passage of material in carding machine and study of various parts of carding machine.
5. Calculation of drafts, speeds and production in carding machine.
6. Study of various settings in carding machine.
7. Passage of material through Draw frame and functions of its important parts.
8. Calculation of drafts, speeds and production in Draw frame machine.
9. Passage of material through speed frame and functions of important parts
10. Calculations of Draft, twist and production in speed frame.

Lab Manual	
1.	"Yarn Manufacturing Laboratory", Department of Textile Technology, KSRCT.

*SDG:12 (Responsible Consumption and Production)-

Course Designer(s)

1. Mr.Subburaayasaran A.S. – subburaayasaran@ksrct.ac.in

Passed in BoS Meeting held on 22/12/2023
Approved in Academic Council Meeting held on 07/01/2023

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Head of the Department
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TIRUCHENGODE-637 215

60 CG 0P2	Career Skill Development II	Category	L	T	P	Credit
		CG	0	0	2	1*

Objectives

- To help learners improve their vocabulary and enable them to use words appropriately in different academic and professional contexts.
- To help learners develop strategies that could be adopted while reading texts.
- To help learners acquire the ability to speak and write effectively in English in real life and career related situations.
- Improve listening, observational skills, and problem-solving capabilities
- Develop message generating and delivery skills

Pre-requisites

Basic knowledge of reading and writing in English.

Course Outcomes

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

CO1	Compare and contrast products and ideas in technical texts.	Analyse
CO2	Identify cause and effects in events, industrial processes through technical texts	Analyse
CO3	Analyse problems in order to arrive at feasible solutions and communicate them orally and in the written format.	Analyse
CO4	Report events and the processes of technical and industrial nature.	Apply
CO5	Articulate their opinions in a planned and logical manner, and draft effective résumés in context of job search.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	-	-	-	-	-	-	-	2	3	3	2	3	-	-	2
CO2	-	-	-	-	-	-	-	2	3	3	2	3	2	2	-
CO3	-	-	-	-	-	-	-	2	3	3	2	3	-	2	-
CO4	-	-	-	-	-	-	-	2	3	3	2	3	-	2	-
CO5	-	-	-	-	-	-	-	2	3	3	2	3	-	-	2
3 - Strong; 2 - Medium; 1 - Some															

Passed in BoS Meeting held on 22/12/2023
Approved in Academic Council Meeting held on 07/01/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.E - Mechanical Engineering								
60 CG 0P2 - Career Skill Development II								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
III	0	0	2	30	1*	100	-	100

Listening* Evaluative Listening: Advertisements, Product Descriptions, - Audio / video; filling a graphic organiser (choosing a product or service by comparison) - Listening to longer technical talks and completing– gap filling exercises. Listening technical information from podcasts – Listening to process/event descriptions to identify cause & effects, documentaries depicting a technical problem and suggesting solutions - Listening to TED Talks	[6]
Speaking* Marketing a product, persuasive speech techniques - Describing and discussing the reasons of accidents or disasters based on news reports, Group Discussion (based on case studies), presenting oral reports, Mini presentations on select topics with visual aids, participating in role plays, virtual interviews	[6]
Reading* Reading advertisements, user manuals and brochures - longer technical texts– cause and effect essays, and letters / emails of complaint - Case Studies, excerpts from literary texts, news reports etc. - Company profiles, Statement of Purpose (SoPs)	[6]
Writing* Professional emails, Email etiquette - compare and contrast essay - Writing responses to complaints Precis writing, Summarizing and Plagiarism- Job / Internship application – Cover letter & Résumé	[6]
Verbal Ability II Reading Comprehension (Inferential fillups) – Spotting Errors – Verbal Analogies – Theme Detection – Change of Voice – Change of Speech – One word substitution	[6]
Total Hours:	**30**

Reference(s):

1.	*'English for Engineers & Technologists'* Orient Blackswan Private Ltd. Department of English, Anna University, 2020
2.	Norman Lewis, *'Word Power Made Easy - The Complete Handbook for Building a Superior Vocabulary Book'*, Penguin Random House India, 2020
3.	Raman. Meenakshi, Sharma. Sangeeta, 'Professional English'. Oxford University Press. New Delhi. 2019
4.	Arthur Brookes and Peter Grundy,' Beginning to Write: Writing Activities for Elementary and Intermediate Learners', Cambridge University Press, New York, 2003

*SDG 4 – Quality Education

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Approved in Academic Council Meeting held on 07/01/2023

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TIRUCHENGODE-637 215

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Listening**	
1.1	Evaluative Listening: Advertisements, Product Descriptions	1
1.2	Listening to longer technical talks and completing– gap filling exercises.	1
1.3	Listening technical information from podcasts	1
1.4	Listening to process/event descriptions to identify cause & effects and documentaries depicting a technical problem and suggesting solutions	1
1.5	Listening to TED Talks	1
2.0	**Speaking**	
2.1	Marketing a product, persuasive speech techniques	1
2.2	Describing and discussing the reasons of accidents or disasters based on news reports,	1
2.3	Group Discussion (based on case studies)	1
2.4	Presenting oral reports, Mini presentations on select topics with visual aids	1
2.5	participating in role plays and virtual interviews	1
3.0	**Reading**	
3.1	Reading advertisements, user manuals and brochures	1
3.2	Reading - longer technical texts– cause and effect essays, and letters / emails of complaint	1
3.3	Case Studies, excerpts from literary texts, news reports etc.	1
3.4	Company profiles	1
3.5	Statement of Purpose (SoPs)	1
4.0	**Writing**	
4.1	Professional emails, Email etiquette	1
4.2	Compare and contrast essay	1
4.3	Writing responses to complaints	1
4.4	Precis writing, Summarizing and Plagiarism	1
4.5	Job / Internship application – Cover letter & Résumé	1
5.0	**Verbal Ability II**	
5.1	Reading Comprehension (Inferential fillups) and Theme Detection	1
5.2	Spotting Errors	1
5.3	Verbal Analogies	1
5.4	Change of Voice and Change of Speech	1
5.5	One word substitution	1

Course Designer(s)

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

Passed in BoS Meeting held on 22/12/2023
Approved in Academic Council Meeting held on 07/01/2023

BoS Chairman
Head of the Department
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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 2023 - 2024)

SEMESTER IV

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	60 MA 022	Applied Statistics	BS	5	3	1	0	4
2.	60 TT 401	Yarn Manufacturing Technology II	PC	3	3	0	0	3
3.	60 TT 402	Fabric Manufacturing Technology II	PC	3	3	0	0	3
4.	60 TT 403	Textile Chemical Processing I	PC	4	2	0	2	3
5.	60 TT E1*	Professional Elective I	PE	3	3	0	0	3
6.	60 OE L0*	Open Elective I	OE	3	3	0	0	3
7.	60 MY 002*	Universal Human Values*	MC	3	3	0	0	3*
PRACTICALS								
8.	60 TT 4P1	Yarn Manufacturing Technology Laboratory II	PC	4	0	0	4	2
9.	60 TT 4P2	Fabric Manufacturing Technology Laboratory	PC	4	0	0	4	2
10.	60 CG 0P3	Career Skill Development III	CG	2	0	0	2	1*
11.	60 CG 0P6	Internship	CG	-	-	-	-	1/2/3*
				34	**21**	**01**	**12**	**23**

***UHV – Extra Credits**
Internship* additional credits is offered based on the duration

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

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K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215
(An Autonomous Institution affiliated to Anna University)

B.E. / B.Tech. Degree Programme

SCHEME OF EXAMINATIONS
(For the candidates admitted in 2023 - 2024)

FOURTH SEMESTER

S. No.	Course Code	Name of the Course	Duration of Internal Exam	Weightage of Marks			Minimum Marks for Pass in End Semester Exam	
				Continuous Assessment *	End Semester Exam **	Max. Marks	End Semester Exam	Total
THEORY								
1	60 MA 022	Applied Statistics	2	40	60	100	45	100
2	60 TT 401	Yarn Manufacturing Technology II	2	40	60	100	45	100
3	60 TT 402	Fabric Manufacturing Technology II	2	40	60	100	45	100
4	60 TT 403	Textile Chemical Processing I	2	50	50	100	45	100
5	60 TT E1*	Professional Elective I	2	40	60	100	45	100
6	60 OE L0*	Open Elective I	2	40	60	100	45	100
7	60 MY 002*	Universal Human Values*	2	100	--	100	--	100
PRACTICAL								
8	60 TT 4P1	Yarn Manufacturing Technology Laboratory II	3	60	40	100	45	100
9	60 TT 4P2	Fabric Manufacturing Technology Laboratory	3	60	40	100	45	100
10	60 CG 0P3	Career Skill Development III	3	100	--	100	--	100
11	60 CG 0P6	Internship	3	100	-	100	-	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, 50 marks for theory cum practical End Semester Examination and 40 marks for practical End semester Examination.

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60 MA 022	APPLIED STATISTICS	Category	L	T	P	Credit
		BS	3	1	0	4

Objectives

- To get exposed to the basics of probability and distributions.
- To familiarize various methods in hypothesis testing.
- To learn basics of correlation, regression and control charts.
- To get exposed to the fundamentals of analysis of variance.
- To construct an appropriate model using time series approach.

Pre-requisites

NIL

Course Outcomes

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

CO1	Apply the basics of probability and distributions in engineering problems.	Apply
CO2	Compute measures of central tendency and measures of dispersion, and apply various methods to test the statistical hypothesis.	Apply
CO3	Calculate correlation and apply control charts for decision making	Apply
CO4	Apply the concepts of ANOVA to test the equality of means for more than two populations.	Apply
CO5	Apply suitable method to measure the trend values.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO2	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO3	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO4	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO5	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks
	1	2	
Remember	10	10	10
Understand	10	10	20
Apply	40	40	70
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	**60**	**60**	**100**

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 MA 022 – APPLIED STATISTICS

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
IV	3	1	0	60	4	40	60	100

Probability and Distributions* Probability (basic concepts) – Probability distributions – Properties of random variable – Moment generating function – Standard distributions – Binomial, Poisson, Weibull and Normal distributions – properties. **Hands - on:** Calculate mean and variance for discrete frequency distribution	[9]
Basic Statistics and Testing of Hypothesis Measures of central tendency: Mean, Median and Mode – Measures of dispersion: Range and Quartile deviation – Statistical Hypothesis – Applications of t, F and chi square distribution for testing mean and variance – Goodness of fit – Independence of attributes* **Hands - on:** Apply Student's t-test to real dataset	[9]
Correlation and Control Charts Correlation and Regression (discrete)* – Control charts – $\overline{X}$ chart – R chart – np chart – p chart – C chart – AQL chart** **Hands - on:** Compute the correlation coefficient between two variables	[9]
Design of Experiments** One-way classification – Completely randomized design – Two-way classification – Randomized block design – Latin square design. **Hands - on:** Perform one-way ANOVA	[9]
Time Series Components of time series – Measurement of trend– Methods of least square: $Y = a + bX$, $Y = a + bX + cX^2$, $Y = ab^X$ trends*** – Method of semi-averages – Method of moving averages(3 and 5 years) **Hands - on:** Apply method of least squares to fit a curve of real dataset	[9]
Total Hours: 45 + 15 (Tutorial)	60

Text Book(s):

1.	J.R.Nagla, "Statistics for Textile Engineers", Wood head Publishing India Limited, 1st edition, New Delhi, 2015
2.	P.N.Arora and S.Arora, 'Statistics for Management', S.Chand and Company Limited, 2009

Reference(s):

1.	G.A.V.Leaf, "Practical Statistics for the Textile Industry: Part I and Part II", The Textile Institute, UK, 1984
2.	J.Hayavadana, "Statistics for textiles and apparel management", Wood head Publishing India limited, 1st edition, New Delhi, 2012
3.	D.C.Montgomery, "Introduction to Statistical Quality Control", John Wiley & Sons Inc.,8th edition, Singapore, 2019
4.	R.A.Johnson and C.B.Gupta, "Miller and Freund's Probability and Statistics for Engineers", Pearson India Education, Asia, 9th Edition, New Delhi, 2017

*SDG 4 – Quality Education

**SDG 12 – Ensure sustainable consumption and production patterns

***SDG 9 – Industry, Innovation and Infrastructure

****SDG 2 – Zero Hunger

Passed in BoS Meeting held on 12/05/2023
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Head of the Department
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K S Rangasamy College of Technology
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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1	**Probability and Distributions**	
1.1	Probability (basic concepts)	2
1.2	Probability distributions	1
1.3	Properties of random variable	1
1.4	Moment generating function	1
1.5	Standard distributions: Binomial distribution	1
1.6	Poisson distribution	1
1.7	Weibull distribution	1
1.8	Normal distribution	1
1.9	Tutorial	2
1.10	Hands-on	1
2	**Basic Statistics and Testing of Hypothesis**	
2.1	Measures of central tendency: Mean, Median and Mode	**3**
2.2	Measures of dispersion: Range and Quartile deviation	2
2.3	Applications of t distribution for testing mean	2
2.4	Applications of F distribution for testing variance	1
2.5	Applications of chi square distribution for testing goodness of fit	1
2.6	Applications of chi square distribution for testing independence of attributes	1
2.7	Tutorial	2
2.8	Hands-on	1
3	**Correlation and Control Charts**	
3.1	Correlation (discrete)	1
3.2	Regression (discrete)	2
3.3	$\overline{X}$ chart – R chart	2
3.4	np chart – p chart	2
3.5	C chart	1
3.6	AQL chart	1
3.7	Tutorial	2
3.8	Hands-on	1
4	**Design of Experiments**	
4.1	Analysis of Variance	1
4.2	One way classification	2
4.3	Completely randomized design	1
4.4	Two way classification	2
4.5	Randomized block design	1
4.6	Latin square design	2
4.7	Tutorial	2
4.8	Hands-on	1
5	**Time Series**	
5.1	Components of time series	1
5.2	Methods of least square: $Y = a + bX$	1
5.3	Methods of least square: $Y = a + bX + cX^2$	2
5.4	Methods of least square: $Y = ab^X$	1
5.5	Method of semi-averages	1
5.6	Method of moving averages(3 and 5 years)	2
5.7	Tutorial	2
5.8	Hands-on	1

Course Designer(s)

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

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

60 TT 401	Yarn Manufacturing Technology - II	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- To explain the working principle, yarn structure, and properties of ring spinning.
- To understand the working principle, yarn structure, and properties of compact spinning.
- To explain the principles of open-end spinning and the rotor spinning process.
- To study in detail the working principles of friction spinning, air-jet spinning, air-vortex spinning, and other modern spinning processes.
- To understand yarn plying, twisting, the types of fancy yarn, and their methods of production.

Pre-requisites

- 60TT 302 - Yarn Manufacturing Technology - I

Course Outcomes

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

CO1	Discuss the yarn formation, process parameters, draft, twist and production calculation in ring spinning.	Understand
CO2	Explain the principle, properties and different methods of condensed yarn spinning.	Understand
CO3	Discuss the principle of yarn formation, process parameters, structure and properties of rotor spun yarn.	Understand
CO4	Explain the friction, air jet, vortex, self-twist, core and wrap yarn production methods.	Analyse
CO5	Describe the yarn plying and production methods of fancy yarn.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1	1	-	-	-	-	-	-	-	3	-	3	3	1
CO2	3	3	1	-	-	-	-	-	-	-	3	-	3	3	1
CO3	3	3	2	-	-	-	-	-	-	-	3	-	3	3	1
CO4	3	1	2	-	-	-	-	-	-	-	3	-	3	3	1
CO5	3	1	2	-	-	-	-	-	-	-	3	-	3	3	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	20	20	34
Understand	40	20	26
Apply	-	10	20
Analyse	-	10	20
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

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

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT 401-Yarn Manufacturing Technology - II								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	3	0	0	45	3	40	60	100

Ring Spinning Principle of yarn formation in ring spinning machines; working of ring spinning machine; cop building; design features of important elements used in ring spinning machine; draft, twist and production calculations in ring spinning machine; end breakage rate – causes and remedies; yarn faults- causes and remedies	[9]
Condensed Yarn Spinning* Condensed yarn spinning – principle, different methods, properties; comparison with ring spun yarn	[9]
Rotor Spinning* Principle of open-end spinning; principle of yarn production by rotor spinning system; design features of important elements used in rotor spinning; structure and properties of rotor yarn	[9]
Other Spinning Systems* Friction, single and two nozzle air jet and air vortex spinning methods – principle of yarn production, raw material used, structure, properties and applications; principle of yarn production by self-twist, core, wrap, siro and solo spinning systems.	[9]
Yarn Plying* Merits of plying of yarns; methods followed for plying – TFO and ring doubling; selection of twist level for plying; calculation of resultant count of plied yarns; types of fancy yarns, method of production	[9]
Total Hours:	**45**

Text Book(s):	
1.	Klein W., Vol. 4 & 5, “A Practical Guide to Ring Spinning” and “New Spinning Systems" The Textile Institute, Manchester, 1987.
2.	Mahendra Gowda, “New Spinning Systems”, NCUTE Publications, 2006.
Reference(s):	
1.	Lawrence C.A. and Chen K.Z, “Rotor Spinning”, Textile Progress, Vol. 13, No.4, Textile Institute, U.K., 1981.
2.	Carl A.Lawerence, “Fundamentals of Spun Yarn Technology”, CRC Press, 2003.
3.	Lord P.R., “Handbook of yarn production”, Wood Head publishing, 2003.
4.	Salhotra K.R, Alagirusamy, Chattopadhyay R, “Ring Spinning, Doubling and Twisting”, NCUTE Publications 2000.

*SDG 12 : Ensure Sustainable Consumption And Production Patterns

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

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K S Rangasamy College of Technology
TIRUCHENGODE-637 215

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Ring Spinning**	
1.1	Principle of yarn formation in ring spinning machines	1
1.2	Working of ring spinning machine	2
1.3	Design features of important elements used in ring spinning machine	3
1.4	Cop building	2
1.5	Draft, twist and production calculations in ring spinning machine	2
1.6	End breakage rate – causes and remedies	1
1.7	Yarn faults- causes and remedies	1
2.0	**Condensed Yarn Spinning**	
2.1	Condensed yarn spinning – principle	1
2.2	Different methods of condensed yarn spinning methods	3
2.3	Properties of condensed yarn	1
2.4	Comparison with ring spun yarn	1
3.0	**Rotor Spinning**	
3.1	Principle of open-end spinning	1
3.2	Principle of yarn production by rotor spinning system	2
3.3	Design features of important elements used in rotor spinning	4
3.4	Structure and properties of rotor yarn	2
4.0	**Other Spinning Systems**	
4.1	Principle of friction spinning.	1
4.2	Principle of yarn production by friction spinning system	1
4.3	Principle of yarn production by air jet spinning system	1
4.4	Principle of yarn production by air vortex spinning system	1
4.5	Raw material used, structure, properties and applications	1
4.6	Principle of yarn production by self-twist and core yarn spinning	2
4.7	Principle of yarn production by wrap, siro and solo spinning system	2
5.0	**Yarn Plying**	
5.1	Merits of plying of yarns	1
5.2	Methods of plying of yarns by TFO	1
5.3	Methods of plying of yarns by Ring doubling	1
5.4	Selection of twist level for plying	1
5.5	Calculation of resultant count of plied yarns	1
5.6	Types of fancy yarns	2
5.7	Method of production of Fancy yarns	2

Course Designer(s)

1. A.S. Subburaayasaran - subburaayasaran@ksrct.ac.in

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60 TT 402	Fabric Manufacturing Technology II	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- To impart basic knowledge in the concepts involved in various mechanisms used in weaving
- To train on the aspects of different mechanisms in loom.
- To educate on the features of jacquard, dobby and drop box mechanism.
- To make the students understand the selection and control of process variables during fabric formation
- To give the knowledge about the different shuttle less looms.

Pre-requisites

- Fabric Manufacturing Technology I

Course Outcomes

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

CO1	Explain the functioning of weaving machine and its parts.	Understand
CO2	Comprehend the various types of shedding mechanism and its requirements.	Remember
CO3	Knowledge on primary and secondary motions of weaving machines.	Understand
CO4	Acquire the knowledge of Auxiliary motion, drop box and terry mechanism.	Remember
CO5	Describe requirements and weft insertion principles of different shuttle less looms.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1	-	-	-	-	-	-	-	-	-	-	2	2	2
CO2	2	3	-	-	-	-	-	-	-	-	-	-	2	1	1
CO3	2	2	-	-	-	-	-	-	-	-	-	-	1	2	2
CO4	2	3	-	-	-	-	-	-	-	-	-	-	2	1	1
CO5	3	2	-	-	-	-	-	-	-	-	-	-	2	2	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 TT 402 - Fabric Manufacturing Technology II								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	3	0	0	45	3	40	60	100

Introduction * Weaving – Principles of weaving, Classification of looms, passage of material through a loom, Types of weaving motions - primary, secondary and auxiliary motions. Loom timing diagram for different motions. Driving of plain power loom; Yarns quality requirements for different types of shuttle looms; Weaving accessories- Types and function of heald wires, heald frames, reeds, shuttle, picker, Temples.	[9]
Shedding ** Shedding – Types of shed, Shedding mechanisms - positive and Negative. Principle and types of tappet, dobby and jacquard mechanism. Tappet shedding – positive and negative. Dobby shedding- climax, cross-border, cam and electronic dobby, designing and pegging. Jacquard shedding - Single lift, Double lift, Cross-border and electronic jacquard. Harness mounting, card punching. Reversing mechanism and limitations of shedding mechanism.	[9]
Picking, Beat up and Secondary Motion *** Picking: Cone over pick, Under pick: side lever and side shaft - Shuttle flight and timing, Checking Devices, swell checking and hydraulic swell checking; check straps. Beat-up – cam beat up mechanism. Sley eccentricity and loom timing diagram. Take up motion: Negative - positive - continuous. Let-off motion: Negative - Positive - Electronic. Types of Back rest.	[9]
Auxiliary Motions ** Weft stop motion – different types and feelers , side weft fork and centre weft fork mechanisms; warp protector mechanism - loose reed and fast reed; warp stop motion – mechanical and electrical; shuttle changing mechanism; cop changing mechanism; Drop box mechanism - 2x1, 4x1 and 4 x 4.	[9]
Shuttle less Loom *** Yarn quality requirements for shuttle less loom; weft preparation for shuttle less loom; weft insertion principle of shuttle less looms in projectile, rapier, air jet, water jet and multiphase looms; Type of nozzles in air jet: weft accumulators; types of selvedge's; techno-economics of shuttle less loom; weaving of blended yarns and filament yarns.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Talukdar M.K., Sriramulu P.K. and Ajgaonkar D.B., "Weaving: Machines, Mechanisms, Management", Mahajan Publishers, Ahmedabad, 1998, ISBN: 81-85401-16-0
2.	Marks R. and Robinson T.C., "Principles of Weaving", The Textile Institute, Manchester,1989, ISBN: 0 900739 258
Reference(s):	
1.	Lord P.R. and Mohamed M.H., "Weaving: Conversion of Yarn to Fabric", Merrow Publications, 1992.
2.	Ormerod, "Modern Preparation and Weaving", Butterworths & Co. Ltd., 1983.
3.	"Woven Fabric production-I (The Plain Power Loom), Woven fabric Production-II (Dobby, Dropbox, Jacquard and Terry Looms)", NCUTE Publications.

*SDG 8: Decent Work and Economic Growth
**SDG 9: Industry, Innovation, and Infrastructure
***SDG 4: Quality Education

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Introduction**	
1.1	Principles of weaving	1
1.2	Classification of looms, passage of material through a loom	1
1.3	Types of weaving motions - primary, secondary and auxiliary motions	1
1.4	Loom timing diagram for different motions, Driving of plain power loom	2
1.5	Yarns quality requirements for different types of shuttle looms	1
1.6	Weaving accessories and Types and function of heald wires	2
1.7	Heald frames, reeds, shuttle, picker, Temples.	1
2.0	**Shedding**	
2.1	Shedding and Types of shedding	1
2.2	Shedding mechanisms of positive and Negative	1
2.3	Principle and types of tappet, dobby and jacquard mechanism	1
2.4	Dobby shedding- climax, cross-border	1
2.5	Cam and electronic dobby	1
2.6	Jacquard shedding -Single lift, Double lift	1
2.7	Cross-border and electronic jacquard	2
2.8	Harness mounting and card punching	1
3.0	**Picking, Beat up and Secondary Motion**	
3.1	Cone over pick and Under pick	1
3.2	Side lever and side shaft	1
3.3	Shuttle flight and timing Checking Devices	1
3.4	swell checking and hydraulic swell checking	1
3.5	Cam beat up mechanism	1
3.6	Sley eccentricity and loom timing diagram	1
3.7	Take up motion of Negative and Positive	1
3.8	Let-off motion: Negative - Positive	1
3.9	Types of Back rest	1
4.0	**Auxiliary Motions**	
4.1	Different types and feelers	1
4.2	Side weft fork and centre weft fork mechanisms	1
4.3	Warp protector mechanism	1
4.4	Loose reed and fast reed	1
4.5	Mechanical and electrical warp stop motion	1
4.6	Shuttle changing mechanism	1
4.7	Cop changing mechanism	1
4.8	Drop box mechanism - 2x1, 4x1 and 4 x 4	2
5.0	**Shuttle less Loom**	
5.1	Yarn quality requirements for shuttle less loom	1
5.2	Weft preparation for shuttle less loom	1
5.3	Shuttle less looms in projectile	1
5.4	Weft insertion of rapier loom	1
5.5	Weft insertion of air jet	1
5.6	Weft insertion of water jet	1
5.7	Weft insertion of Multiphase loom	1
5.8	Type of nozzles in air jet and weft accumulators	2

Course Designer(s)

1. Mr.M.Arunkumar - arunkumar@ksrct.ac.in

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

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Head of the Department
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TIRUCHENGODE-637 215

60 TT403	Textile Chemical Processing I	Category	L	T	P	Credit
		PC	2	0	2	3

Objectives

- To impart technical knowledge on desizing and scouring process.
- To impart technical knowledge on bleaching and mercerizing process.
- To impart technical knowledge on cellulosic material dyeing process.
- To impart technical knowledge on synthetic material dyeing process.
- To impart knowledge on the construction and working principles of wet processing and machineries.

Pre-requisites

Course Outcomes

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

CO1	Explain the wet process sequences for various fabrics and summarize the pretreatment processes and their efficiency for cotton, wool and silk material.	Analyse
CO2	Describe the objectives and types of bleaching and mercerization of different materials also evaluate their efficiency and select suitable chemicals and other auxiliaries.	Analyse
CO3	Explain the classification and applications of various dyes and analyze their fastness properties.	Apply
CO4	Summarize the principle of dyeing of synthetic fibres with various techniques.	Apply
CO5	Demonstrate the working principles involved in preparatory and dyeing machineries.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	2	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	3	2	-	-	-	-	-	-	-	-	-	3	2	-
CO3	3	3	2	-	-	-	-	-	-	-	-	-	3	2	-
CO4	3	2	2	-	-	-	-	-	-	-	-	-	3	-	2
CO5	3	3	2	-	-	-	-	-	-	-	-	-	3	-	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)				Model Examination (Marks)	End Sem Examination (Marks)	
	Test 1		Test 2				
	Theory	Lab	Theory	Lab	Lab	Theory	Lab
Remember	20	-	20	-	-	34	-
Understand	10	-	10	-	-	26	-
Apply	10	50	20	50	50	20	50
Analyse	10	50	-	50	50	20	50
Evaluate	-	-	-	-	-	-	-
Create	-	-	-	-	-	-	-
Total	60	100	60	100	100	100	100

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K S Rangasamy College of Technology
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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 TT 403 - Textile Chemical Processing I

Semester	Hours / Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
IV	2	0	2	60	3	50	50	100

Singeing, Desizing and Scouring * Singeing: Singeing methods, types of singeing Machines. Desizing: Desizing methods, enzymatic desizing-mechanism, desizing efficiency. Scouring: Objectives and mechanism, Wool carbonizing and degumming of silk.	[6]
Bleaching and Mercerizing* Bleaching: Hypochlorite and hydrogen peroxide bleaching - per-acidic, sodium chlorite, ozone, enzymatic bleaching; Mercerization: objectives, methods, yarn mercerizer; fabric mercerizing machine– chainless and circular.	[6]
Dyeing of Cellulose Fibres and Protein Fibres* Classification of Dyes, Pigments and their properties; Theory of dyeing. Affinity and Substantivity of dyes. Dyeing of cellulosic materials with direct dyes and reactive dyes Dyeing mechanism of wool and silk materials with acid dyes.	[6]
Dyeing of Synthetic Fibres* Dyeing of polyester with Disperse dyes-Carrier, HTHP and Thermosol dyeing methods. Dyeing of acrylic with cationic dyes, dyeing of P/C blends.	[6]
Dyeing Machineries * Scouring, bleaching and dyeing machines - hank, package, jigger, soft flow, soft-over flow, machines; padding mangles; Advanced garment dyeing machines-paddle and rotary drum dyeing machine	[6]
Practical: 1. Desizing of grey cotton fabric using enzymes 2. Scouring of cotton 3. Bleaching of cotton using hypochlorite and hydrogen peroxide 4. Dyeing of cotton with Reactive dyes. 5. Dyeing of polyester with disperse dyes. 6. Dyeing of polyester/cotton blends with disperse/reactive dyes 7. Dyeing of Wool and Silk Fibres and Fabrics with Acid Dyes 8. Dyeing of Wool and Silk fibres and Fabrics with Base Dyes 9. Mini project **Tools used: MATLAB / ALTAIR / Open Source - Scilab**	[30]
Total Hours: (Lecture - 30; Practical - 30)	**60**

Text Book(s):

1.	Trotman,E.R., "Dyeing and Chemical Technology of Textile Fibres", Charles Griffin and Co.Ltd.,London.2001.
2.	Bhagwat R.S "Handbook of Textile Processing Machinery", Colour Publication, Mumbai, 1999.

Reference(s):

1.	Kesav V. Datye and A.A.Vaidya, "Chemical processing of synthetic fibers and Blends", John wiley & Sons, 2004.
2.	Bhagwat R.S "Hand book of Textile Processing", Colour Publication, Mumbai, 1999.
3.	T.L.Vigo, "Textile Processing and Properties", Elsevier, NewYork, 2013
4.	L. AshokKumar and M Senthilkumar, " Automation in Textile Machinery: Instrumentation and Control System Design Principles",2018.

* SDG 8- Decent Work and Economic Growt

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Course Contents and Lecture Schedule

S. No.	Topics	No. of Hours
1	Singeing, Desizing and Scouring	
1.1	Singeing: Singeing methods, types of singeing Machines	1
1.2	Desizing: Desizing methods	1
1.3	Enzymatic desizing-mechanism	1
1.4	Desizing efficiency.	
1.5	Scouring: objectives and mechanism	1
1.6	Wool carbonizing and degumming of silk	1
2	Bleaching and Mercerizing	
2.1	Bleaching: Hypochlorite and hydrogen peroxide bleaching	
2.2	per-acidic, sodium chlorite bleaching	1
2.3	Ozone, enzymatic bleaching;	1
2.4	Mercerization: objectives and methods,	1
2.5	Yarn mercerizer; fabric mercerizing machines	1
2.6	Chainless and circular mercerizing machines	1
3	Dyeing of Cellulose Fibres and Protein Fibres	
3.1	Classification of Dyes, Pigments and their properties;	
3.2	Theory of dyeing.	1
3.3	Affinity and Substantivity of dyes.	1
3.4	Dyeing of cellulosic materials with direct dyes	1
3.5	Dyeing of cellulosic materials with reactive dyes	1
3.6	Dyeing mechanism of wool and silk materials with acid dyes	1
4	Dyeing of Synthetic Fibres	
4.1	Dyeing of polyester with Disperse dyes-Carrier dyeing methods.	
4.2	Dyeing of polyester with Disperse dyes-HTHP and Thermosol dyeing methods.	1
4.3	Dyeing of acrylic with cationic dyes,	2
4.4	Dyeing of P/C blends.	1
5	Dyeing Machineries	
5.1	Scouring, bleaching and dyeing machines	1
5.2	Hank, package, jigger dyeing machines	1
5.3	Soft flow dyeing machines	1
5.4	Soft-over flow dyeing machines;	1
5.5	Padding mangles;	1
5.6	Advanced garment dyeing machines-paddle and rotary drum dyeing machine	
Practical:		
1.	Desizing of grey cotton fabric using enzymes	2
2.	Scouring of cotton	4
3.	Bleaching of cotton using hypochlorite and hydrogen peroxide	4
4.	Dyeing of cotton with Reactive dyes.	2
5.	Dyeing of polyester with disperse dyes.	2
6.	Dyeing of polyester/cotton blends with disperse/reactive dyes	4
7.	Dyeing of Wool and Silk Fibres and Fabrics with Acid Dyes	4
8.	Dyeing of Wool and Silk fibres and Fabrics with Base Dyes	2
9.	Mini project	4

Course Designer(s)

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

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

BoS Chairman
Head of the Department
Department of Textile Technology
K S Rangasamy College of Technology
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60 MY 002	UNIVERSAL HUMAN VALUES	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- To identify the essential complementarily between 'values' and 'skills'
- To ensure core aspirations of all human beings.
- To acquire ethical human conduct, trustful and mutually fulfilling human behaviour
- To enrich interaction with Nature
- To achieve holistic perspective towards life and profession

Pre-requisites

Course Outcomes

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

CO1	Understand the significance of value inputs in formal education and start applying them in their life and profession	Understand
CO2	Evaluate coexistence of the "I" with the body.	Analyse
CO3	Identify and evaluate the role of harmony in family, society and universal order.	Analyse
CO4	Classify and associate the holistic perception of harmony at all levels of existence and Nature	Analyse
CO5	Develop appropriate human conduct and management patterns to create harmony in professional and personal lives.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1	1	-	-	-	-	3	2	-	2	3	1	1	3
CO2	3	3	1			3		3	3		-	3	1	1	3
CO3	3	3	2	-	-	3	3	3	3	-		3	1	1	3
CO4	3	1	2			3	3	3	3		-	3	1	1	3
CO5	3	1	2	-	-	3	3	3	3	3		3	1	1	3
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 MY 002- Universal Human Values								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	3	0	0	45	3*	100	-	100

Introduction to value Education* Understanding value Education-Self exploration as the process for value education-Continuous Happiness and prosperity-the basic human aspirations-right understanding-relationship and physical facility –happiness and prosperity - current scenario – **method to fulfill the basic human aspirations.****	[9]
Harmony in the Human Being* Understanding Human being as the Co-Existence of the self and the Body-Distinguishing between the needs of the self and the body-the body as an instrument of the self-**understanding harmony in the self-harmony of the self with the body**** – programme to ensure self-regulation and health.	[9]
Harmony in the Family and Society* Harmony in the Family –the basic unit of human interaction-values in human- to - human relationship –'Trust' the foundation value in relationship –'Respect'- as the right evaluation-understanding harmony in the society –vision for the universal human order.	[9]
Harmony in the Nature/Existence* Understanding harmony in the Nature-Interconnectedness, self-regulation and mutual fulfillment among the four orders of nature – realizing existence as co-existence at all levels –the holistic perception of harmony in existence.	[9]
Implications of the Holistic Understanding* Natural Acceptance of human values- definitiveness of human conduct- a basis for humanistic education, humanistic constitution and universal human order- competence in professional ethics –holistic technologies, production systems and management models-typical case studies – strategies for transition towards value base life and profession	[9]
Total Hours:	**45**

Text Book(s):	
1.	A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-47-1
2.	Teachers' Manual for A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-53-2
Reference(s):	
1.	Jeevan Vidya: EkParichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
2.	Human Values, A.N. Tripathi, New Age International. Publishers, New Delhi, 2004.

*SDG:3 – Good Health and Well-Being

**SDG:5 – Quality Education

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1	**INTRODUCTION TO VALUE EDUCATION**	
1.1	Discussion on Present Education System and Skill Based Education	1
1.2	Understanding Value Education	1
1.3	Self exploration as the process for value education	1
1.4	Basic Human Aspirations - Continuous Happiness and Prosperity	1
1.5	Basic requirements to fulfill Human Aspirations - Right understanding, Relationship and Physical facility	1
1.6	Transformation from Animal Consciousness to Human Consciousness	1
1.7	Sources of Happiness and Prosperity – Harmony and Disharmony	1
1.8	Current Scenario and Role of Education	1
1.9	Outcome of Human Education and Method to fulfill the basic human aspirations	1
2	**HARMONY IN THE HUMAN BEING**	
2.1	Understanding Human being - As Co-Existence of the self and the Body - The Needs of the Self and the Body	1
2.2	Understanding Human being - As Co-Existence of the self and the Body - The Activities and Response of the Self and the Body	2
2.3	The body as an instrument of the self	1
2.4	Understanding harmony in the self	1
2.5	Harmony of the self with the body	2
2.6	Programme to ensure self-regulation and health	1
2.7	My Participation (Value) regarding Self and my Body - Correct Appraisal of our Physical needs	1
3	**HARMONY IN THE FAMILY AND SOCIETY**	
3.1	Harmony in the Family - Understanding Values in Human Relationships	1
3.2	Family as the basic Unit of Human Interaction	1
3.3	Values in human Relationships	1
3.4	Trust - the foundation value in relationship	1
3.5	Respect as the right evaluation, the Basis for Respect, Assumed Bases for Respect today	1
3.6	Harmony from Family to World Family: Undivided Society	1
3.7	Extending Relationship from family to society , Identification of the Comprehensive Human Goal	1
3.8	Programs needed to achieve the Comprehensive Human Goal: The Five Dimensions of Human Endeavour	1
3.9	Harmony from Family Order to World Family Order – Universal Human Order	1
4	**HARMONY IN THE NATURE / EXISTENCE**	
4.1	The Four Orders in Nature	1
4.2	Participation of Human Being in Entire Nature	1
4.3	Natural Characteristics - Tendency of Human Living with Animal Consciousness / The Holistic Perception of Harmony in Existence	1
4.4	Present day Problems	1
4.5	Recyclability and self-regulation in Nature	1
4.6	Relationship of Mutual Fulfillment	1
4.7	An Introduction to space, Co-existence of Units in Space	1
4.8	Harmony in Existence – Understanding Existence as Co- Existence	1
4.9	Natural Characteristic of Human Living with Human Consciousness	1

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5.0	**IMPLICATIONS OF THE HOLISTIC UNDERSTANDING**	
5.1	Natural Acceptance of human values	1
5.2	Definitiveness of Ethical Human Conduct - Development of Human Consciousness	1
5.3	Identification of Comprehensive Human Goal	1
5.4	Basis for Humanistic Education and Humanistic Constitution	1
5.5	Ensuring Competence in professional Ethics	1
5.6	Issues in Professional Ethics-The Current Scenario	1
5.7	Holistic Technologies and Production Systems and management models - Typical Case Studies	2
5.8	Strategies for transition towards value based life and profession	1

Course Designer(s)

1. Dr.G.Vennila - vennila@ksrct.ac.in
2. Dr.K.Raja - rajak@ksrct.ac.in

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60 TT 4P1	Yarn Manufacturing Technology Laboratory II	Category	L	T	P	Credit
		PC	0	0	4	2

Objectives

- To enable the students to learn material passage in the machine.
- To know the important parts of machines, draft, twist and production calculations inspinning machines.
- To train the students to handle machine and operate them practically.
- To make the students to know about optimum settings on various mechanism of spinningmachine based on the process variables.
- To Know the production and characteristics of fancy yarns and doubled yarn

Pre-requisites

Yarn Manufacturing Technology Laboratory I

Course Outcomes

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

CO1	Demonstrate the working of ring spinning frame and builder motion Calculate the speedand production of ring spinning frame	Apply
CO2	Calculate the twist and set the machine variables in ring spinning frame	Apply
CO3	Calculate the twist and production of rotor spinning machine	Apply
CO4	Select optimum process variables and produce two ply yarn using two-for-one twister.and calculate the twist and production of two-for-one twister	Analyse
CO5	Produce fancy yarns on fancy Doubler winder machine Set the variables and produce quality yarns using fancy doubler machine	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1	1	-	-	-	-	-	-	-	-	-	3	3	1
CO2	3	3	1	-	-	-	-	-	-	-	2	-	3	3	1
CO3	3	3	2	-	-	-	-	-	-	-	3	-	3	3	1
CO4	3	1	2	-	-	-	-	-	-	-	3	-	3	3	1
CO5	3	1	2	-	-	-	-	-	-	-	2	-	3	3	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	Lab	Activity		
Remember	-	-	-	-
Understand	10	05	25	25
Apply	20	10	25	25
Analyse	20	10	50	50
Evaluate	-	-	-	-
Create	-	-	-	-
Total	50	25	100	100

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K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT 4P1 – Yarn Manufacturing Technology Laboratory II								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	0	0	4	60	2	60	40	100

List of Experiments:

1. Passage of material through ring frame, production of yarn and testing of yarn count.
2. Different settings in ring frame and selection of rings and travellers for different counts.
3. Calculation of Draft and production in ring frame.
4. Calculation of Twist and production in ring frame.*
5. Study of builder mechanism in ring frame.*
6. Passage of material through Rotor spinning machine.*
7. Calculation of Rotor spinning production of yarn and testing of yarn count.
8. Calculation of Twist in Rotor spinning machine.*
9. Passage of material through ring doubling machine, production of yarn and testing of yarn count. Process sequence for production of sewing threads.*
10. Passage of material through Two-For-One twister (TFO), production of ply yarn and measurement of ply yarn count. Calculation of twist in TFO.*
11. Production and quality characterization of two-fold yarns.*

Design Experiments:

12. Production of fancy yarns using fancy doublers.*
13. Passage of material through Doubler Winding, production of ply yarn and measurement of ply yarn count

Lab Manual	
1.	"Yarn Manufacturing Technology Laboratory II", Department of Textile Technology, KSRCT.

*SDG:12 (Responsible Consumption and Production)-

Course Designer(s)

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

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60 TT 4P2	Fabric Manufacturing Technology Laboratory	Category	L	T	P	Credit
		PC	0	0	4	2

Objectives

- To develop skills in the operation and maintenance of weaving preparatory machines.
- To develop practical knowledge of dismantling, assembling and setting of basic weaving mechanisms.
- To prepare the pattern card for a given design.
- To develop the design using drop box mechanism.
- To know about the working principles of circular weft knitting machine.

Pre-requisites

- Fabric Manufacturing Technology II

Course Outcomes

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

CO1	Set the optimum process variables and carry out winding using supply package winding machine and calculate the production.	Understand
CO2	Practice dismantling, assembling and setting of primary motions.	Apply
CO3	Perform dismantling, assembling and setting of secondary motions.	Apply
CO4	Perform dismantling, assembling and setting of auxiliary motions.	Apply
CO5	Comprehend the production in circular weft knitting machine.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	2	-	-	3	-	-	3	-	2	-	2	3	-
CO2	3	3	2	-	-	3	-	-	2	2	3	-	3	2	2
CO3	3	3	2	2	-	3	-	-	2	-	3	-	3	-	-
CO4	3	3	2	2	-	3	-	-	2	2	3	-	2	-	-
CO5	3	2	3	3	-	3	-	-	2	-	3	-	2	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	Lab	Activity		
Remember	-	-	-	-
Understand	20	-	50	50
Apply	20	25	25	25
Analyse	10	-	25	25
Evaluate	-	-	-	-
Create	-	-	-	-
Total	50	25	100	100

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K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT 4P2 – Fabric Manufacturing Technology Laboratory								
Semester	**Hours/Week**			**Total Hrs**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	0	0	4	60	2	60	40	100

List of Experiments:

1. Passage of material through the cone winding machine. Setting of tensioners and slub catchers in cone winding machine. Calculation of drum speed, traverse speed, production in cone winding machine.*
2. Passage of material through the pirn winding machine. Calculation of production in pirn winding machine.
3. Passage of material through sectional warping machine.
4. Dismantling and assembling of tappet shedding mechanism in plain power loom.
5. Dismantling and assembling of cone over pick mechanism and study the adjustment of picking force. **
6. Dismantling and assembling of cone under pick mechanism and study the adjustment of picking force.
7. Dismantling and assembling of beat –up mechanism and calculation of sley eccentricity.
8. Dismantling and assembling of negative let-off mechanism and adjustment of warp tension.
9. Dismantling and assembling of seven wheel take-up mechanism and calculation of dividend.
10. Dismantling and assembling of five wheel take-up mechanism and calculation of dividend. ***
11. Dismantling and assembling of warp & weft stop motion.

Design Experiments

12. Designing of pegging plan on wooden lags and preparation of punched card for 4x4 drop box mechanism for a given design.
13. Develop a Material passage and production calculation for single jersey / rib weft knitting machine.

Lab Manual	
1.	"Fabric Manufacturing Technology Lab Manual", Department of Textile Technology, KSRCT.

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

Course Designer(s)

1. Mr.M.Arunkumar – arunkumar@ksrct.ac.in

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60 CG 0P3	CAREER SKILL DEVELOPMENT III	Category	L	T	P	Credit
		CG	0	0	2	1*

Objectives

- To help learners improve their logical reasoning skills at different academic and professional contexts.
- To help learners relate basic quantitative problems and solve them.
- To help learners Infer critically the statements with optimal conclusions and assumptions.
- To Solve the quantitative problems pertaining to calculations of averages, ratio and proportions, and profit and loss effectively
- To compute quantitative problems related to time and work, speed and distance, and simple and compound interest

Pre-requisites

- Basic knowledge of Arithmetic and Logical Reasoning

Course Outcomes

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

CO1	Deduce the topics in logical reasoning at the preliminary and intermediate level.	Analyse
CO2	Relate basic quantitative problems and solve them effectively at the preliminary level	Apply
CO3	Infer critically the statements with optimal conclusions and assumptions with the data and information given.	Analyse
CO4	Solve the quantitative problems pertaining to calculations of averages, ratio and proportions, and profit and loss effectively at the pre-intermediate level.	Apply
CO5	Compute quantitative problems related to time and work, speed and distance, and simple and compound interest at intermediate level.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	-	-	3	-	-	-	-	-	-	-	-	3	-	2
CO2	3	3	3	3	-	-	-	-	-	-	-	-	3	-	2
CO3	2	-	-	-	-	-	-	-	-	-	-	-	3	-	2
CO4	3	3	3	3	-	-	-	-	-	-	-	-	3	-	2
CO5	3	3	3	3	-	-	-	-	-	-	-	-	2	-	2

3 - Strong; 2 - Medium; 1 - Some

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K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 CG 0P3 - Career Skill Development III								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	0	0	2	30	1*	100	00	100

Logical Reasoning Analogies - Alpha and numeric series - Number Series - Coding and Decoding - Blood Relations - Coded Relations - Order and Ranking – odd man out - Direction and distance	[6]
Quantitative Aptitude – Part 1 Number system - Squares & cubes - Divisibility - Unit digits - Remainder Theorem - HCF & LCM - Geometric and Arithmetic progression - Surds & indices	[6]
Critical Reasoning Syllogism - Statements and Conclusions, Cause and Effect, Statements and Assumptions - identifying Strong Arguments and Weak Arguments – Cause and Action - Data sufficiency	[6]
Quantitative Aptitude – Part 2 Average - Ratio and proportion – Ages – Partnership– Percentage - Profit & loss – Discount - Mixture and Allegation	[6]
Quantitative Aptitude – Part 3 Time & Work - Pipes and cistern – Time, Speed & distance - Trains - Boats and Streams - Simple interest and Compound interest	[6]
Total Hours	**30**
Reference(s):	

1.	Aggarwal, R.S. 'A Modern Approach to Verbal and Non-verbal Reasoning', Revised Edition 2008, Reprint 2009, S.Chand & Co Ltd., New Delhi.
2.	Abhijit Guha, 'Quantitative Aptitude', McGraw Hill Education, 6th edition, 2016
3.	Dinesh Khattar, 'Quantitative Aptitude For Competitive Examinations', Pearson Education 2020
4.	Anne Thomson, 'Critical Reasoning: A Practical Introduction' Lexicon Books, 3rd edition, 2022. Warszaw

* SDG- 04- Quality Education
**SDG 8 – Decent work and Economic growth
***SDG 9 – Industry, innovation and Infrastructure

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Course Contents and Lecture Schedule		
S.No	**Topic**	**No. of Hours**
1	**Logical Reasoning**	
1.1	Analogies - Alpha and numeric series	1
1.2	Number Series - Coding and Decoding	1
1.3	Blood Relations - Coded Relations	1
1.4	Order and Ranking – odd man out	1
1.5	Direction and distance	1
2	**Quantitative Aptitude – Part 1**	
2.1	Number system	1
2.2	Squares & cubes - Divisibility	1
2.3	Unit digits - Remainder Theorem	1
2.4	HCF & LCM- Geometric and Arithmetic progression	1
2.5	Surds & indices	1
3	**Critical Reasoning**	
3.1	Syllogism	1
3.2	Statements and Conclusions, Cause and Effect	1
3.3	Statements and Assumptions	1
3.4	identifying Strong Arguments and Weak Arguments	1
3.5	Cause and Action -Data sufficiency	1
4	**Quantitative Aptitude – Part 2**	
4.1	Average - Ratio and proportion	1
4.2	Ages – Partnership	1
4.3	Percentage	1
4.4	Profit & loss	1
4.5	Discount - Mixture and Allegation	1
5	**Quantitative Aptitude – Part 3**	
5.1	Time & Work	1
5.2	Pipes and cistern	1
5.3	Time, Speed & distance - Trains	1
5.4	Boats and Streams	1
5.5	Simple interest and Compound interest	1
	Total Hours	**25**

Course Designer(s)

1. R. Poovarasan- poovarasan@ksrct.ac.in

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60 TT E 11	High Performance Fibres	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To comprehend the basics of advanced spinning technology
- To know various methods of manufacturing high performance fibres
- To acquire knowledge on their applications in various fields
- To gain concepts on testing procedure of materials
- To obtain information on special fibres

Pre-requisites

- **Fibre Science & Structure and Properties of Fibres**

Course Outcomes

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

CO1	Compare the conventional and advanced spinning process.	Understand
CO2	Demonstrate the manufacturing process of high performance fibres.	Understand
CO3	Analyze the properties of fabrics produced using chemical and thermal resistant fibres	Understand
CO4	Explain the application of high performance fibres in Medical field	Understand
CO5	Evaluate the performance of specialty fibres	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	3	1	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	2	3	-	-	-	-	-	-	-	-	-	-	3	-	1
CO4	2	3	-	-	-	-	-	-	-	-	-	-	3	-	-
CO5	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

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

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 TT E 11 - High Performance Fibres								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	3	0	0	45	3	40	60	100

Advanced Spinning Technology Advances in conventional fiber forming process; gel spinning; Dry-jet-wet spinning; liquid crystal spinning; electro-spinning twistless spinning	[9]
High Performance Fibres for Industrial Applications Manufacturing, properties and applications of glass fibers, basalt fibers; Kevlar fibers, carbon fibers, high performance polyethylene fibers.	[9]
Chemical and Thermal Resistant Fibres Manufacture of aramid fibers; properties and application of aramid fibers; Basofil, Glass and Ceramic fibers, Sulphur fibers, properties and applications of PBO, PBI and PI fibers.	[9]
High Performance Fibres for Medical Applications* Manufacturing, properties and applications of alginate fibers; chitin and chitosan fibers; regenerated silk and wool protein fibers; synthetic biodegradable fibers like PLA and SAF.	[9]
Specialty Fibres* Hollow and profile fibers; blended and bi-component fibers; film fibers and functionalized fibers for specific applications.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Kothari V.K., “Textile Fibers: Development and Innovations”, Vol. 2, Progress in Textiles, IAFL Publications, 2000.
2.	Mishra S P., “A Text Book of Fibre Science and Technology,” New Age International (P) Ltd., New Delhi, 2000
Reference(s):	
1.	Kothari V.K., “Textile Fibers: Development and Innovations”, Vol. 2, Progress in Textiles, IAFL Publications, 2000.
2.	Mishra S P., “A Text Book of Fibre Science and Technology,” New Age International (P) Ltd., New Delhi, 2000

*SDG 12 : Ensure Sustainable Consumption And Production Patterns

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

BoS Chairman
Head of the Department
Department of Textile Technology
K S Rangasamy College of Technology
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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Advanced Spinning Technology**	
1.1	Advances in conventional fiber forming process	1
1.2	gel spinning	1
1.3	Dry-jet-wet spinning	1
1.4	liquid crystal spinning	2
1.5	electro-spinning	1
1.6	Twistless spinning	2
2.0	**High Performance Fibres For Industrial Applications**	
2.1	Manufacturing, properties and applications of glass fibers	3
2.2	basalt fibers	1
2.3	Kevlar fibers	2
2.4	carbon fibers	1
2.5	High performance polyethylene fibers.	2
3.0	**Chemical and Thermal Resistant Fibres**	
3.1	Manufacture of aramid fibers	1
3.2	Properties and application of aramid fibers	1
3.3	Basofil,	1
3.4	Glass	1
3.5	Ceramic fibers	1
3.6	Sulphur fibers	1
3.7	Properties and applications of PBO	1
3.8	Pbi	1
3.9	PI fibers.	1
4.0	**High Performance Fibres for Medical Applications**	
4.1	Manufacturing, Properties And Applications Of Alginate Fibers	3
4.2	Chitin	1
4.3	Chitosan Fibers	1
4.4	Regenerated Silk	1
4.5	Wool Protein Fibers	1
4.6	Synthetic Biodegradable Fibers Like PLA	1
4.7	Saf	1
5.0	**Specialty Fibres**	
5.1	Hollow And Profile Fibers	2
5.2	Blended	1
5.3	Bi-Component Fibers	2
5.4	Film Fibers	2
5.5	Functionalized Fibers For Specific Applications	2

Course Designer(s)

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

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

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

60 TT E 12	Man Made Fibre Technology	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To enable the students to learn about the polymer rheology and the laws
- To acquire knowledge on melt spinning
- To gain knowledge on solution spinning
- To comprehend the post spinning operations
- To obtain ideas on new developments in fibre spinning

Pre-requisites

- **Structure and Properties of Fibres**

Course Outcomes

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

CO1	Discuss polymer rheology and the laws	Understand
CO2	List various spinning techniques of polymers and parameter involved in spinning syntheticyarn	Understand
CO3	Explain Properties and application of synthetic yarns	Understand
CO4	Outline the need of various post spinning operations	Understand
CO5	Categorize the advances in the spinning process	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	3	3	2
CO2	3	-	-	-	-	-	-	-	-	-	-	-	3	3	2
CO3	2	-	-	-	-	-	-	-	-	-	-	-	3	3	2
CO4	2	-	-	-	-	-	-	-	-	-	-	-	3	3	2
CO5	3	-	-	-	-	-	-	-	-	-	-	-	3	3	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	30	30	30
Understand	30	30	15
Apply	-	-	30
Analyse	-	-	25
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Passed in BoS Meeting held on 12/05/2023
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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT E 12 - Man Made Fibre Technology								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	3	0	0	45	3	40	60	100

Polymer Rheology* Spinability of liquids, rheology of spinning, formation of fibre structure	[9]
Melt Spinning** Melt Spinning- Polymer Selection and Preparation, equipment, properties and applications of polyester, polyamide and polypropylene fibres.	[9]
Solution Spinning** Solution spinning- Polymer Selection and Preparation, equipment, properties and applications of aramid, acrylic,polyurethane and regenerated cellulose fibres*	[9]
Post Spinning Operations** Neck drawing, drawing systems, influence of drawing on structure and properties of fibres; Types of heat setting, influencing parameters on heat setting, influence of heat setting on fibre behaviour; Influence of heat setting on dyeing Spin finish composition and application; Evaluation methods; Texturising — Need and methods. Textured yarn characteristics	[9]
Developments in Fiber Spinning** Liquid crystal spinning; Gel spinning, Electro spinning; Profile fibres, hollow and porous fibres; Specialty fibres poly glycolic acid, polylactic acid, chitosan fibres preparation properties and applications*	[9]
Total Hours:	**45**

Text Book(s):	
1.	Kothari V. K., "Textile Fibres: Development and Innovations", Vol. 2, Progress in Textiles, IAFL Publications, New Delhi, 2000
2.	Vaidya A. A., "Production of Synthetic Fibres", Prentice Hall of India Pvt. Ltd., New Delhi, 1988
Reference(s):	
1.	Gupta V. B. and Kothari V. K. (Editors), "Manufactured Fibre Technology", Kluwer Academic Publishers, 1997.
2.	Cook J. G., "Handbook of Textile Fibres: Vol. 2: Man Made Fibres", The Textile Inst., 5th Ed. 1984.
3.	Srinivasa Murthy H. V., "Introduction to Textile Fibres", Textile Association, India, 1987.
4.	Nakasjima (English edition, edited by Kajiwara K. and McIntyre J. E.), "Advanced Fibre Spinning Technology", Wood head Publication Ltd., England, 1994.

*SDG 12: Responsible Consumption and Production

**SDG 9: Industry, Innovation, and Infrastructure

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Head of the Department
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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Polymer Rheology**	
1.1	Spinability of liquids,	2
1.2	Rheology of spinning	2
1.3	Formation of fibre structure	3
2.0	**Melt Spinning**	
2.1	Melt Spinning	1
2.2	Polymer Selection and Equipment	2
2.3	Preparation, Properties and applications of polyester	2
2.4	Preparation, Properties and applications of polyamide	2
2.5	Preparation ,Properties and applications of polypropylene fibres	2
3.0	**Solution Spinning**	
3.1	Solution spinning	2
3.2	Polymer Selection and Equipment	1
3.3	Preparation, properties and applications of aramid	1
3.4	Preparation, properties and applications of Acrylic	1
3.5	Preparation, properties and applications of polyurethane	1
3.4	Preparation, properties and applications of regenerated cellulose fibres	3
4.0	**Post Spinning Operations**	
4.1	Neck drawing, drawing systems	1
4.2	Influence of drawing on structure and properties of fibres	1
4.3	Types of heat setting	1
4.4	Influencing parameters on heat setting	2
4.5	Influence of heat setting on fibre behavior	1
4.6	Influence of heat setting on dyeing	1
4.7	Spin finish composition and application	1
4.8	Evaluation methods	2
5.0	**Developments in Fiber Spinning**	
5.1	Liquid crystal spinning;	1
5.2	Gel spinning,	1
5.3	Electro spinning	1
5.4	Profile fibres, hollow and porous fibres	1
5.5	Specialty fibres -poly glycolic acid preparation properties and application	2
5.6	Specialty fibres -polylactic acid preparation properties and applications	2
5.7	Specialty fibres -chitosan fibres preparation properties and applications	2

Course Designer(s)

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

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TIRUCHENGODE-637 215

60 TT E 13	Textured Yarn Technology	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To impart knowledge on heat setting and mechanism of texturing.
- To understand the different methods of texturing
- To impart the knowledge on characteristics and various end uses of texturing
- To explain the concepts of different textured yarns

Pre-requisites

- **Yarn Manufacturing Technology**

Course Outcomes

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

CO1	Explain the raw materials required for texturing and explain basic principles and methods of texturing.	Understand
CO2	Infer the factors involved and mechanism of heat setting, discuss the fiber morphology and yarn properties during heat setting.	Understand
CO3	Interpret about the twisting device ,heating ,cooling and take-up systems of false twist texturing and discuss about characteristics of feed yarns and process parameter like time and temperature	Understand
CO4	Relate the air jet texturing yarn production, express airflow pattern in different types of nozzles, loop formation mechanism and analyze the evaluation of air-jet textured yarn.	Understand
CO5	Examine the working procedure of stuffer box, edge crimping, and knit-de- knit, gear crimping, bicomponent filament texturing and differential shrinkage texturing.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1	1	-	-	-	-	-	-	-	-	-	3	3	1
CO2	3	2	1	-	-	-	-	-			-	-	3	3	1
CO3	2	1	1	-	-	-	-	-	-	-	-	-	3	3	1
CO4	2	2	2	-	-	-	-	-			-	-	3	3	1
CO5	2	2	2	-	-	-	-	-	-	-	-	-	3	3	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	30	30	30
Understand	30	30	15
Apply	-	-	30
Analyse	-	-	25
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT E 13 –Textured Yarn Technology								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	3	0	0	45	3	40	60	100

Introduction* Need for bulking of synthetic yarns; texturability of fibres, state and quality of raw material required; classifications, Basic principles and methods of texturing.	[9]
Heat Setting Heat setting – need, types of setting, mechanism, factors involved; effect on fibre morphology and yarn properties; evaluation of heat setting processes; fundamentals of thermo-mechanical texturing, Helanca process.	[9]
False Twist Texturing Draw texturing - simultaneous and sequential draw texturing; twisting devices; heating and cooling systems; Positorque System take-up systems; characteristics of feed yarns; process parameters-time, temperature, twist, tension; evaluation of false twist. Textured yarns; end-uses.	[9]
Air Jet Texturing Types of yarns produced*; airflow pattern in different types of nozzles; loop formation mechanism, factors involved;evaluation of air-jet textured yarn; comparison of air-jet textured yarn with spun and false twist textured yarns; end uses.	[9]
Other Methods of Yarn Texturing Stuffer box, edge crimping, knit-de-knit and gear crimping methods; bi-component filament texturing; differential shrinkage texturing; chemo - mechanical texturing; limitations and applications	[9]
Total Hours:	**45**

Text Book(s):	
1.	Hes L. Ursiny P., “Yarn Texturing Technology”, Eurotex, U.K., 1994.
2.	Behery H.M. and Demir A., “Synthetic Filament Yarn Texturing Technology”, Prentice Hall, 1996 ISBN 0134400259.,
Reference(s):	
1.	Guirajani M.L. (Edr.), “Annual Symposium of Texturing”, I.I.T Delhi, 1977
2.	Wilson D.K. and Kollu T., “Production of Textured Yarns by the False Twist Technique”, tile Progress, Vol. 21,No.3, Textile Institute, Manchester, U.K., 1991.
3.	Gupta V.B. (Edr.), “Winter School on Man-made Fibers – Production, Processing, Structure, perties and Applications”, Vol. 1, 1988.
4.	J.W.S. Hearle, L.Hollick, D.K.Wilson, “Yarn Texturing Technology”, Wood head, 2001, ISBN 9313104, 9780849313103.

*SDG 12 : Ensure Sustainable Consumption And Production Patterns

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

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

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Introduction**	
1.1	Introduction of Texturising	1
1.2	Texturability of fibres	1
1.3	State and quality of raw material required	1
1.4	Classification of Texturising	1
1.5	Basic Principles of Texturising	1
1.6	Need for bulking of synthetic yarns	1
1.7	Methods of Texturising	1
1.8	Properties of fibres required for Texturising	1
2.0	**Heat Setting**	
2.1	Definitions- Heat Setting and its need	1
2.2	Types of Heat setting	1
2.3	Mechanism of heat setting	1
2.4	Factors Involved in heat setting	1
2.5	Effect of fibre morphology	1
2.6	Yarn properties	1
2.7	Evaluation of heat setting processes	1
2.8	Fundamentals of thermo-mechanical texturing	1
2.9	Helanca Process	1
3.0	**False Twist Texturing**	
3.1	Draw texturing – Definition	1
3.2	Draw texturing - simultaneous draw texturing	1
3.3	Draw texturing – Sequentional draw texturing	1
3.4	Twisting devices; heating and cooling systems	1
3.5	Take systems	1
3.4	Characteristics of feed yarns; process parameters-time, temperature, twist, tension; evaluation of false twist . Textured yarns; end-uses.	2
3.5	Process parameters-time, temperature	1
3.6	Twist, tension.	2
3.7	Evaluation of false twist	1
3.8	Textured yarns ,End Uses	1
4.0	**Air Jet Yarn Texturising**	
4.1	Types of yarns produced	1
4.2	Airflow pattern in different types of nozzles	2
4.3	Loop Formation Mechanism	1
4.4	Factors involved in loop formation	1
4.5	Evaluation of air jet textured yarn	1
4.6	Comparison of air jet textured yarn with spun yarn	2
4.7	False twist textured yarn and its end uses.	2
5.0	**Other Methods of Yarn Texturing**	
5.1	Stuffer box texturising	1
5.2	Edge crimping	1
5.3	Bear crimping methods	1
5.4	Bi-component filament texturing	1
5.5	Differential shrinkage texturing	1
5.6	Chemo - mechanical texturing	2
5.7	Limitations and applications	1

Course Designer(s)

1. **Mr.G.Devanand – devanandg@ksrct.ac.in**

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

BoS Chairman
Head of the Department
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60 TT E 14	Process Control in Spinning	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- Study process and quality control in spinning, including relevant statistical tools.
- Explore inspection techniques and contamination control in raw materials and processes.
- Control waste and enhance raw material conservation for better yarn quality and productivity.
- Choose suitable materials and machinery for desired yarn and fabric quality.
- Understand customer needs and implement quality and audit processes in spinning mills

Pre-requisites

- Yarn Manufacturing Technology – I & II

Course Outcomes

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

CO1	Know the process control, key variables, and statistical methods in spinning.	Understand
CO2	Develop skills for raw material quality control and optimizing spinning performance.	Analyse
CO3	Learn waste minimization, yarn realization optimization, and contamination control.	Analyse
CO4	Analyze yarn quality metrics and conduct end-use performance simulations.	Analyse
CO5	Identify the productivity optimization in ring spinning, including machinery maintenance and environmental effects.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO3	2	2	-	-	-	-	-	-	-	-	-	-	2	2	-
CO4	2	2	-	-	-	-	-	-	-	-	-	-	2	2	-
CO5	2	2	-	-	-	-	-	-	-	-	-	-	2	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT E 14 - Process Control in Spinning								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	3	0	0	45	3	40	60	100

Unit – 1 Process Control Concept and Statistical Application Scope of process control in spinning - Identification of process variables and product characteristics to control process in the Cotton godown, blow room, card, draw frame, comber, speed frame and yarn spinning - Concepts of developing norms and standards for spinning process. Application of statistical techniques in process and quality control. Use of HVI and AFIS for process control operation.	[9]
Unit – 2 Control of Raw Material Quality including contaminations, Quality control of mixing quality through fibre quality characteristics – Concept of fibre quality index and its application – Prediction of spinnability and yarn quality – Blending irregularity;- fibre rupture analysis- Causes of nep and hook generation –.nep removal in carding and combing machines. Online monitoring and control of neps and hooks on modern cards; Measurement of neps and hooks, performance evaluation parameters for each department	[9]
Unit -3 * Control of Yarn Realization and Waste Estimation of yarn realization – Determination of trash content and cleaning efficiency, cleaning intensity in blow room and carding – Determination of comber noil and combing efficiency – Control of waste in blow room, Contamination clearing efficiency. carding and comber - Control of hard waste.	[9]
Unit - 4 Yarn Qualit*y Control Assessment of within and between bobbin count variations, Assessment and control of count variations in preparatory machines and ring frame – Assessment of yarn unevenness and imperfections - causes for unevenness and imperfections- analysis and interpretation spectrograms – unevenness caused by random fibre arrangement – Drafting waves – Periodic variation. Yarn hairiness and Compact yarn quality, Yarn faults – classification – assessment of faults – causes and methods to reduce faults. Causes for variability in strength, elongation and hairiness and measures for their control, Simulation studies for end use performance assessment	[9]
Unit -5 Production Control Factors affecting the productivity in ring spinning,Spindle point production standards*, Productivity indices like Utilisation.Production efficiency,HOK etc,. Methods for maximizing production in spinning machinery – New concepts like individual spindle monitoring systems,. Effect of Machinery maintenance and Humidity on production; balancing of machineries.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Garde. A.R.& SubramaniamT.A.,"Process Control in Spinning" ,ATIRA, Ahmedabad 1989.
2.	Ratnam T.V.& Chellamani. K.P.,"Quality Control in Spinning", SITRA Coimbatore
Reference(s):	
1.	ChattopadhyayR.,"Advances in Technology of Yarn Production", NCUTE Publication, New Delhi, 2002.
2.	LordP.R,"Yarn Production; Science, Technology ,and Economics", The Textile Institute, Manchester,1999.
3.	Furter.R.," Strength and Elongation Testing of Single and Ply Yarns",& "Eveness Testing in Yarn Production", (PartII),TheTextileInstitute,Manchester,U.K.,1985.
4.	ChattopadhyayR.,"AdvancesinTechnologyofYarnProduction",NCUTEPublication,NewDelhi,2002.

*SDG 12 : Ensure Sustainable Consumption And Production Patterns

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	Unit 1	
1.1	Process Control Concept and Statistical Application Scope of process control in spinning	2
1.2	Identification of process variables	1
1.3	Identification of process variables and product characteristics to control process in the blow room, card,	1
1.4	Identification of process variables	1
1.5	Identification of process variables and product characteristics to control process in speed frame and yarn spinning	1
1.6	Concepts of developing norms and standards for spinning process.	1
1.7	Application of statistical techniques in process and quality control.	1
1.8	Use of HVI and AFIS for process control operation.	
2.0	**Unit – 2**	
2.1	Control of Raw Material Quality including contaminations, Quality control of mixing quality through fibre quality characteristics	1
2.2	Concept of fibre quality index and its application – Prediction of spinnability and yarn quality	2
2.3	Blending irregularity;- fibre rupture analysis	1
2.4	Causes of nep and hook generation –.nep removal in carding and combing machines.	1
2.5	Online monitoring and control of neps and hooks on modern cards;	2
2.6	Measurement of neps and hooks, performance evaluation parameters for each department	2
3.0	**Unit 3**	
3.1	Control of Yarn Realization and Waste Estimation of yarn realization	1
3.2	Determination of trash content and cleaning efficiency, cleaning intensity in blow room	1
3.3	Determination of trash content and cleaning efficiency, cleaning intensity in carding	1
3.4	Determination of comber noil and combing efficiency	1
3.5	Control of waste in blow room	1
3.6	Contamination clearing efficiency	1
3.7	Carding and comber	1
3.8	Control of hard waste	1
4.0	**Unit 4**	
4.1	Yarn quality control assessment of within and between bobbin count variations	1
4.2	Assessment and control of count variations in preparatory machines and ring frame	1
4.3	Assessment of yarn unevenness and imperfections - causes for unevenness and imperfections- Analysis and interpretation spectrograms	1
4.4	Unevenness caused by random fibre arrangement – drafting waves – periodic variation.	1
4.5	Yarn hairiness and compact yarn quality,	1
4.6	Yarn faults – classification – assessment of faults – causes and methods to reduce faults.	1
4.7	Causes for variability in strength, elongation and	1
4.8	Hairiness and measures for their control	1
4.9	Simulation studies for end use performance assessment	1
5.0	**Unit 5**	

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5.1	Production Control Factors affecting the productivity in ring spinning	1
5.2	Spindle point production standards, Productivity indices like Utilisation	1
5.3	Production efficiency ,HOK	1
5.4	Methods for maximizing production in spinning machinery	2
5.5	New concepts like individual spindle monitoring systems,	2
5.6	Effect of Machinery maintenance and Humidity on production & Balancing of machineries	2

Course Designer(s)

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

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Head of the Department
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60 TT E 15	Home Textiles	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To acquire knowledge on recent developments in furnishing and other home textile products.
- To analyze textiles based products used in home textiles.
- To acquire knowledge on various flammability requirements of home textiles.
- To acquire knowledge on recent developments in floor covering home textile products.
- To know the various designs / styles of bed linen classification, types of mattresses and mattresses covers

Pre-requisites

- Fabric Manufacturing Technology

Course Outcomes

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

CO1	Describe different types fabrics, finishes and surface ornamentation on home textiles.	Remember
CO2	Compare different furnishings and analyzing factors influencing in the selection of home furnishings for different products	Understand
CO3	Discuss the type sand end uses of different floor coverings and analyze the types and factors influencing of different floor coverings.	Analyse
CO4	Describe the types of doors, windows and their choice of fabrics used in curtains and draperies	Analyse
CO5	Evaluate the properties of home textiles and describe the home decoration articles and bed linens	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	-	-	-	-	-	2	-	-	3	2	
CO2	3	2	-	-	-	-	-	-	-	2	-	-	3	2	
CO3	3	2	-	-	-	-	-	-	-	2	-	-	3	2	
CO4	3	-	-	-	-	-	-	-	-	2	-	-	3	2	
CO5	3	3	3	3	3	-	-	-	-	2	-	-	3	2	

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	20	30	34
Understand	20	30	26
Apply	10	-	30
Analyse	10	-	10
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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.Rangasamy College of Technology – Autonomous R2022

B.Tech – Textile Technology

60 TT E 15 - Home Textiles

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
IV	3	0	0	45	3	40	60	100

Introduction Introduction to home textiles; definition and classification of home textiles, Furnishing materials - woven, non-woven and knitted; different types of fibres used for home textile; eco-friendly home textiles; Special finishes and surface ornamentation on home textile products; Indian home textiles industry and its future prospects.	[9]
Furnishings Types of furnishings used for different interiors- living room, dining room, kitchen, bed room, bathroom and kids room. Home decorations- sofa covers, cushion, cushion cover, upholsteries, wall hangings, bolster, bolster covers and throws;Factors influencing the selection of home furnishings for different interiors; Requirements of furnishing for different interiors, role of fabrics in interior furnishing.	[9]
Floor Coverings* Soft floor covering; Types of floor covering -carpet, rugs, pads and carpet cushion; Fibres used; salient of features of carpet, rugs, cushions and pads ; Factors influencing the selection of different floor covering and its maintenance, recent developments.	[9]
Curtains and Draperies* Different types of doors and windows used; Curtains and draperies- types and choice of fabrics, calculating the material required for curtains, construction of curtains for different types of windows and doors; Method of finishing draperies; Developments in tucks, pleats, uses of drapery rods, hooks, tape rings and pins.	[9]
Linens* Bed linens- classification and types of mattresses and mattresses covers; quilt, quilt cover, bed spreads, blankets, comforts and comfort covers, pads, pillows ; Properties required for hotel and hospital linens; recent developments. Testing of home textile-abrasion, antimicrobial, flammability, shrinkage and color fastness.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Alexander. N. G., “Designing Interior Environment”, Mas Court Brace Covanorich, New York, 2001
2.	Wingate IB &Mohlen J.F. “Soft Furnishings”. Prentice Hall Inc, New York, 2000
Reference(s):	
1.	Donserkery K. G., “Interior Decoration in India”, D. B. Taraporevala Sons and Co. Pvt Ltd., 1993
2.	Robert Harding, “Curtains, Blinds and Valances”, Egatemoss, Ohio, 1998
3.	Brian D Coleman, “Luxurious Home Interiors”, Gibbs Smith Publication, Hong Kong, 2004
4.	Wingate IB &Mohlen J.F. “Textile Fabrics and Their Selection,” Prentice Hall Inc, New York, 2000

***SDG 12 :** Ensure Sustainable Consumption And Production Patterns

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Introduction**	
1.1	Introduction to home textiles	1
1.2	definition and classification of home textiles	1
1.3	Furnishing materials - woven, non-woven and knitted	1
1.4	different types of fibres used for home textile	2
1.5	eco-friendly home textiles	1
1.6	Special finishes and surface ornamentation on home textile products	2
1.7	Indian home textiles industry and its future prospects	1
2.0	**Furnishings**	
2.1	Types of furnishings used for different interiors- living room, dining room kitchen, bed room, bathroom and kids room	3
2.2	Home decorations- sofa covers, cushion, cushion cover, upholsteries, wall hangings, bolster, bolster covers and throws	2
2.3	Factors influencing the selection of home furnishings for different interiors	2
2.4	Requirements of furnishing for different interiors, role of fabrics in interior furnishing.	2
3.0	**Floor Coverings**	
3.1	Soft floor covering Types of floor covering -carpet, rugs, pads and carpet cushion	2
3.2	Fibres used	2
3.3	Salient of features of carpet,rugs, cushions and pads	2
3.4	Factors influencing the selection of different floor covering and its maintenance, recent developments.	3
4.0	**Curtains and Draperies**	
4.1	Different types of doors and windows used	1
4.2	Curtains and draperies- types and choice of fabrics	2
4.3	Calculating the materialrequired for curtains	1
4.4	Construction of curtains for different types of windows and doors	2
4.5	Method of finishing draperies	1
4.6	Developments in tucks, pleats, uses of drapery rods, hooks, tape rings and pins	2
5.0	**Linens**	
5.1	ed linens- classification and types of mattresses and mattresses covers	2
5.2	quilt, quilt cover, bed spreads, blankets, comfortsand comfort covers, pads, pillows	2
5.3	Properties required for hotel and hospital linens	1
5.4	recent developments	2
5.5	Testing of home textile-abrasion, antimicrobial, flammability, shrinkage and color fastness	2

Course Designer(s)

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

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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

60 TT E 16	Silk Technology	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To gain knowledge in silk preparation and its machineries.
- To correlate the theoretical importance of silk, silk rearing and silk reeling

Pre-requisites

- Fibre Science
- Structure and Properties of Fibre

Course Outcomes

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

CO1	Know the sericulture and silk industry and cultivation and grading of silk.	Remember
CO2	Express the classification and varieties of mulberry and non-mulberry silks	Understand
CO3	Explain the principle of silk worm rearing and various methods of silk worm rearing.	Apply
CO4	Explain the silk reeling and machineries used for silk reeling.	Analyse
CO5	Describe the silk throwing, winding, doubling, twisting and grading of silk	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1	1		2	-	-	-	-	1	2	2	3	3	1
CO2	3	1	1	2	2	-	-	-	-	-	-	2	3	3	1
CO3	3	3	2	2	2	-	-	-	-	-	-	2	3	3	1
CO4	3	3	2	1	2	-	-	-	-	-	-	2	3	3	1
CO5	3	3	1	1	2	-	-	-	-	-	-	2	3	3	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	20	20	34
Understand	40	20	36
Apply	-	20	30
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 TT E 16 - Silk Technology								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	3	0	0	45	3	40	60	100

Introduction Geographical distribution, cultivation & grading of silk fibre; Introduction to sericulture and silk industry; Classification & varieties of mulberry & non mulberry silk; Species – multivoltine, bivoltine and univoltine species; Scope for non-mulberry silk in India.	[9]
Silk Rearing* General principles of silk worms rearing; Environmental conditions for silk worm rearing; various methods; Precautions during rearing; Rearing equipment and their maintenance; Silk worm seed production and activities in a grainage house.	[9]
Cocoon Cocoon quality; Stifling and conditioning of cocoons, boiling and brushing of cocoons; Different types of cocoons; Importance of cocoon quality; Pretreatment of cocoons; Factors influencing quality of cocoon; Cocoon characteristics; Storage of cocoons; Cocoon sorting.	[9]
Silk Reeling and Throwing Cocoon cooking – objectives, various methods cooking; Silk reeling - systems of silk reeling, factors influencing silk reeling, silk reeling machinery; Re-reeling, skein finishing & packing; Recent developments in reeling of silk; Wild silk reeling; Throwing – objectives, winding, doubling, re-winding and twisting; Manufacture of yarns for use in ordinary, chiffon, crepe, georgette fabrics; Recent developments in silk throwing machinery.	[9]
Quality Control and Testing of Silk* Quality Control in Reeling: Characteristics of water, Raw silk testing & grading – National & International methods of testing & grading of raw silk, shell ratio, assessment of reelability. Application and end uses of silk. Different types blended fabric, modal, union fabric and spun silk. Market potential and demand of silk fibre, furnishing cloth, silk needs, Branded product in silk,varities of banaras silk .	[9]
Total Hours:	**45**

Text Book(s):	
1.	Sonwalker T.A., “Handbook of silk technology”, Wiley Eastern, Chennai, 1992
2.	Shekar P. and Ardingham, “Sericulture and silk production – A hand book”, Intermediate Technology, U.K., 1995.
Reference(s):	
1.	“Manuals on Sericulture”, Food and agriculture organisation of the United Nations, Rome, 1976
2.	Nanavathy M., “Silk production, processing and marketing”, Wiley Eastern, 1991.

*SDG 12 : Ensure Sustainable Consumption And Production Patterns

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

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

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Introduction**	
1.1	Geographical distribution	1
1.2	Cultivation & grading of silk fibre	1
1.3	Introduction to sericulture and silk industry	2
1.4	Classification & varieties of mulberry & non mulberry silk	2
1.5	Species – multivoltine, bivoltine and univoltine species	2
1.6	Scope for non-mulberry silk in India	1
2.0	**Silk Rearing**	
2.1	General principles of silk worms rearing	1
2.2	Environmental conditions for silk worm rearing	1
2.3	Various methods of silk worm rearing	2
2.4	Precautions during rearing	1
2.5	Rearing equipment and their maintenance	2
2.6	Silk worm seed production and activities in a grainage house	2
3.0	**Cocoon**	
3.1	Cocoon quality	1
3.2	Stifling and conditioning of cocoons	1
3.3	Boiling and brushing of cocoons	1
3.4	Different types of cocoons	1
3.5	Importance of cocoon quality & Pretreatment of cocoons	2
3.6	Factors influencing quality of cocoon	1
3.7	Cocoon characteristics	1
3.8	Storage of cocoons; Cocoon sorting	1
3.9	**Silk Reeling and Throwing**	
4.0	Cocoon cooking – objectives, various methods cooking	1
4.1	Silk reeling - systems of silk reeling, factors influencing silk reeling	1
4.2	Silk reeling machinery	2
4.3	Re-reeling, skein finishing & packing	1
4.4	Recent developments in reeling of silk; Wild silk reeling	1
4.5	Throwing – objectives, winding, doubling, re-winding and twisting	1
4.6	Manufacture of yarns for use in ordinary, chiffon, crepe, georgette fabrics	1
4.7	Recent developments in silk throwing machinery	1
4.8	**Quality Control and Testing of Silk**	
5.0	Quality Control in Reeling: Characteristics of water	1
5.1	Raw silk testing– National & International methods of testing of raw silk	2
5.2	Raw silk grading	2
5.3	Application and end uses of silk	1
5.4	Different types blended fabric, modal, union fabric and spun silk	1
5.5	Market potential and demand of silk fibre, furnishing cloth	1
5.6	Branded product in silk,varities of Banaras silk	1

Course Designer(s)

1. A.S. Subburaayasaran – subburaayasaran@ksrct.ac.in

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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

60 TT E 17	Fashion Design - Principles and Silhouettes	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To enable Students understand and comprehend the fundamentals of visual art.
- To impart the knowledge of properties of lines, shapes, colors and compositions made
- To enable the students develop characteristic shapes, forms and textures

Pre-requisites

- **Garment Manufacturing Technology**

Course Outcomes

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

CO1	To master the techniques of sketching and drawing	Apply
CO2	Analyze and apply different types of color schemes	Apply
CO3	Critique the aesthetics of art and fashion	Analyse
CO4	Apply the principles of designing in practical projects	Apply
CO5	Design and create fashion accessories	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	-	-	-	-	2	2	-	-	-	-	2
CO2	3	-	-	-	-	-	-	-			-	-	-	-	2
CO3	3	-	-	-	-	-	-	-	2	2	-	-	-	-	2
CO4	3	-	-	-	-	-	-	-			-	-	-	-	2
CO5	3	-	-	-	-	-	-	-	2	2	-	2	-	-	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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.Rangasamy College of Technology – Autonomous R2022								
B.Tech. - Textile Technology								
60 TT E 17- Fashion Design - Principles and Silhouettes								
Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
IV	3	0	0	45	3	40	60	100

Fundamentals Of Visual Art Drawing With Perspectives - Single Point And Two-Point Perspectives. Drawing Without Perspectives Planar Drawing. Situation Sketching, Drawing From A Photograph. Highlighting, Shades And Values In A Drawing, Abstraction And Developing Shapes From Common DrawingElements: Angle And Proportion	[9]
Fashion Rendering Color Theory, Psychological Primary Colors & Secondary Colors, Different Types Of Color Schemes. Color Rendering - Water Colors, Color Pencils, Oil Pastels And Acrylics. Features Of Painted Arte Facts. Elements And Principles Of Design In Art And Sculpture	[9]
Art Interpretation Different Types Of Art Styles-Romantism, Neo Classicism, Art Deco, Modern Art, AbstractExpressionism, Surrealism, Pop Art & Post-Modern Art. Aesthetics Of Art - Subject View, Composition View, Content View And Context View. Gestalt Principles Of Perception, Visual CoreConcepts Of Fashion.	[9]
Principles Of Fashion Designing* Principles Of Fashion Designing: Embellishments, Asymmetrical Forms, Biomorphic Forms, Structured Garments, Layering And Wrapping Styles, Fluid Draping And Flagging Drape Lines, Body Conscious Dresses, Feminine Patterns, Movement And Pattern, Texture And Motifs.	[9]
Fashion Accessories Fashion Accessories-Hair Accessories, Headgear, Neck Accessories, Shoe Accessories, Ear Accessories, Brooches, Ties And Scarves, Shawls, Sashes. Carried Accessories - Handbags AndUmbrellas.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Laura Volintesta, language of fashion design: 26 principles every fashion designer should know,Rockport publishers, 2014.
2.	Lois Fichner-Rathus, Understanding Art, Clark baxter, Tenth Edition, 2011
Reference(s):	
1.	Francis D.K. Ching with Steven P. Juroszek, Design drawing, John wiley & sons , second edition,2010
2.	Janice G Ellinwood, Fashion by design, Fairchild books, 2011
3.	Valerie steele, Encyclopedia of clothing and fashion, Thomson gale, 2005

*SDG 9 – Industry Innovation and Infrastructure

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Fundamentals of Visual Art**	
1.1	Drawing with perspectives	2
1.2	Drawing without perspectives - planar drawing	2
1.3	Situation sketching	2
1.4	Drawing from a photograph	2
1.5	Highlighting shades and values in drawing	2
1.6	Abstraction and shape development	1
2.0	**Fashion Rendering**	
2.1	Color theory	2
2.2	Psychological primary and secondary colors	2
2.3	Different types of color schemes	2
2.4	Color rendering techniques	1
2.5	Features of painted artifacts	2
3.0	**Art Interpretation**	
3.1	Different Art styles	2
3.2	Aesthetics of art (various views)	2
3.3	Gestalt principles of perception	2
3.4	Visual core concepts of fashion	1
3.5	Integration and application of styles	2
4.0	**Principles of Fashion Designing**	
4.1	Embellishments	2
4.2	Asymmetrical and biomorphic forms	2
4.3	Structured garments and layering	1
4.4	Fluid draping and flagging drape lines	2
4.5	Body conscious dresses	2
4.6	Textures, motifs, and feminine patterns	2
5.0	**Fashion Accessories**	
5.1	Types of hair and headgear accessories	2
5.2	Neck, ear, and shoe accessories	1
5.3	Brooches, ties, and scarves	2
5.4	Shawls, sashes, and carried accessories	2
5.5	Design and utility assessment of accessories	2
5.6	Trends in fashion accessories	2

Course Designer(s)

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

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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

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 V

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	60 TT 501	Knitting Technology	PC	4	2	0	2	3
2.	60 TT 502	Textile Chemical Processing II	PC	3	3	0	0	3
3.	60 TT 503	Woven Fabric Structure	PC	3	3	0	0	3
4.	60 TT 504	Technical Textiles I	PC	3	3	0	0	3
5.	60 TT E2*	Professional Elective II	PE	3	3	0	0	3
6.	60 OE L0*	Open Elective II	OE	3	3	0	0	3
7.	60 MY 003	Startups & Entrepreneurship	MC	2	2	0	0	2*
PRACTICALS								
8.	60 TT 5P1	Textile Chemical Processing Laboratory	PC	3	0	0	3	1.5
9.	60 TT 5P2	Fabric Structure Laboratory	PC	3	0	0	3	1.5
10.	60 TT 5P3	Design Thinking and Innovation Laboratory	PC	2	0	0	2	1
11.	60 CG 0P4	Career Skill Development IV	CG	2	0	0	2	1*
12.	60 CG 0P6	Internship	CG	-	-	-	-	1/2/3*
				31	**19**	**0**	**12**	**22**

*** additional credits is offered based on the duration**

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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TIRUCHENGODE-637 215

K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215
(An Autonomous Institution affiliated to Anna University)

B.E. / B.Tech. Degree Programme

SCHEME OF EXAMINATIONS
(For the candidates admitted in 2024-2025)

FIFTHTH SEMESTER

S. No.	Course Code	Name of the Course	Duration of Internal Exam	Weightage of Marks			Minimum Marks for Pass in End Semester Exam	
				Continuous Assessment *	End Semester Exam **	Max. Marks	End Semester Exam	Total
THEORY								
1.	60 TT 501	Knitting Technology	2	50	50	100	45	100
2.	60 TT 502	Textile Chemical Processing II	2	40	60	100	45	100
3.	60 TT 503	Woven Fabric Structure	2	40	60	100	45	100
4.	60 TT 504	Technical Textiles I	2	40	60	100	45	100
5.	60 TT E2*	Professional Elective II	2	40	60	100	45	100
6.	60 OE L0*	Open Elective II	2	40	60	100	45	100
7.	60 MY 003	Startups & Entrepreneurship	2	100	-	100	-	100
PRACTICAL								
8.	60 TT 5P1	Textile Chemical Processing Laboratory	3	60	40	100	45	100
9.	60 TT 5P2	Fabric Structure Laboratory	3	60	40	100	45	100
10.	60 TT 5P3	Design Thinking and Innovation Laboratory	2	60	40	100	45	100
11.	60 CG 0P4	Career Skill Development IV	3	100	-	100	-	100
12.	60 CG 0P6	Internship	3	100	-	100	-	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, 50 marks for theory cum practical End Semester Examination and 40 marks for practical End semester Examination.

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

BoS Chairman
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K S Rangasamy College of Technology
TIRUCHENGODE-637 215

60 TT 501	Knitting Technology	Category	L	T	P	Credit
		PC	2	0	2	3

Objectives

- To explain the mechanism of weft knitting of various knitted structures.
- To demonstrate the mechanism of warp knitting of various knitted structures.
- To impart knowledge on basic knitted structures of various knitted fabrics.
- To explain the modern development in the mechanism of various knitted fabric production.
- To impart knowledge on recent trends in knitted garment production.

Pre-requisites

- Fibre Science, Spinning

Course Outcomes

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

CO1	Explain the classification of weft knitting machines with its yarn quality and the terminology used in knitting.	Understand
CO2	Attribute the selection of weft knitting elements and weft knitting structures.	Understand
CO3	Classify warp knitting and its structures.	Understand
CO4	Categorize the elements of flat knitting machines and its types.	Understand
CO5	Analyse the developments and quality control in knitting.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-	3	2	-
CO5	3	3	3	3	3	-	-	-	-	-	-	-	3	2	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)				Model Examination (Marks)	End Sem Examination (Marks)	
	Test 1		Test 2				
	Theory	Lab	Theory	Lab	Lab	Theory	Lab
Remember	20	-	20	-	-	34	-
Understand	40	-	40	-	-	46	-
Apply	-	50	-	50	50	-	50
Analyse	-	50	-	50	50	20	50
Evaluate	-	-	-	-	-	-	-
Create	-	-	-	-	-	-	-
Total	60	100	60	100	100	100	100

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S. Rangasamy College of Technology – Autonomous R2022								
B. Tech. - Textile Technology								
60 TT 501 - Knitting Technology								
Semester	**Hours / Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	2	0	2	60	3	50	50	100

Weft Knitting Classification of weft knitting machines; yarn quality requirements for knitting and its impact; knitting elements and terminology of the basic circular knitting machine, single jersey, rib, interlock and purl knitting machines – construction and knitting operation.	[6]
Advances in Weft Knitting and Structures Needle selection in weft knitting - multi-cam tracks, pattern wheels, pattern drums, Single jersey, rib, purl and interlock structures – characteristics and their derivatives – half and full cardigan, fundamentals of formation of knit, tuck and float stitches.	[6]
Warp Knitting Classification of warp knitting machines; knitting elements and working of Raschel and Tricot knitting machines, production of elementary warp knitted structures - lapping diagrams and notations. Open lap, closed lap, overlap, underlap, swinging, and shogging. Warp knit structures. Production calculations in warp knitting.	[6]
Flat Knitting Basic principles and elements of flat knitting machines; different types of flat knitting machines- manual, mechanical and computer-controlled.	[6]
Recent developments and Quality Control in knitting Seamless garments, mechanism of socks knitting and process flow. Process control in knitting; defects in knitted fabrics- causes and remedies.	[6]
Practical: 1. Analyzing the Single jersey fabric and its derivatives. 2. Analyzing the Rib, interlock fabric and its derivatives. 3. Analyzing the Purl structures. 4. Production calculation of Flat knitting structures. 5. Study the Spirality of Knitted structure. 6. Identifying the different weft knitted structure faults. 7. Calculation on needle requirement for various yarn count. 8. Material passage and production calculation for single jersey machine. 9. Material passage and production calculation for rib weft knitting machine. 10. Material passage and production calculation for interlock weft knitting machine.	[30]
Total Hours: (Lecture - 30; Practical - 30)	**60**

Text Book(s):	
1.	Ajgaonkar. D.B., "Knitting Technology", Universal Publication Corporation, Mumbai, 2006 (Second Edition).
2.	David J Spencer, (3rd Ed.). "Knitting Technology" A comprehensive hand book and practical guide, woodhead publishing, uk, 2021,
Reference(s):	
1.	Anbumani. N., "Knitting fundamentals, machines, structures and developments", New Age International (P) Ltd., Publisher, 2007.
2.	Samuel Raz., "Flat Knitting; The new generation", Meisenbach GmbH, Bamberg, 1993.
3	Gajjap B.J., "Handbook of warp Knitting Technology", Textile Institute, Manchester, 2004.
4	Maity, S., et. al., Advanced Knitting Technology, Woodhead Publishing, UK. 2021.
5	Bipin Kumar, "Weft and Warp Knitting Technology", NPTEL web course

*SDG 9 – Industry Innovation and Infrastructure

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of Hours
1	**Weft Knitting**	
1.1	Classification of weft knitting machines.	1
1.2	Yarn quality requirements for knitting and its impact	1
1.3	Terminology of the basic circular knitting machine,	1
1.4	Single jersey and Rib – construction and knitting operation	1
1.5	Interlock and purl knitting machines – construction and knitting operation	2
2	**Weft Knitting elements and Structures**	
2.1	Needle selection in weft knitting - multi-cam tracks	1
2.2	Pattern wheels, pattern drums	1
2.3	Single jersey, rib, purl and interlock structures	1
2.4	Characteristics and their derivatives - half and full cardigan	1
2.5	Fundamentals of formation of knit, tuck and float stitches.	2
3	**Warp Knitting**	
3.1	Classification of warp knitting machines	1
3.2	Knitting elements and working of Raschel and Tricot knitting machines,	1
3.3	Production of elementary warp knitted structures - lapping diagrams and notations.	1
3.4	Open lap, closed lap, overlap, underlap, swinging, and shogging.	1
3.5	Warp knit structures. Production calculations in warp knitting	2
4	**Flat Knitting**	
4.1	Basic principles and elements of flat knitting machines;	2
4.2	Flat knitting machines- manual	2
4.3	Flat knitting machines- mechanical	1
4.4	Flat knitting machines- computer-controlled.	1
5	**Recent developments and Quality Control in knitting**	
5.1	Seamless garments	2
5.2	Mechanism of socks knitting and process flow	2
5.3	Process control in knitting; defects in knitted fabrics- causes and remedies	2
Practical:		
1.	Analysing the Single jersey fabric and its derivatives.	4
2.	Analysing the Rib, interlock fabric and its derivatives.	2
3.	Analysing the Purl structures.	2
4.	Production calculation of Flat knitting structures.	4
5.	Study the Spirality of Knitted structure.	2
6.	Identifying the different weft knitted structure faults.	4
7.	Calculation on needle requirement for various yarn count.	4
8.	Material passage and production calculation for single jersey machine.	4
9.	Material passage and production calculation for rib weft knitting machine.	2
10.	Material passage and production calculation for interlock weft knitting machine	2

Course Designer(s)

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

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

60 TT 502	Textile Chemical Processing II	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- To impart knowledge on methods and styles of printing.
- To impart knowledge on various printing process.
- To impart knowledge on various methods of finishing.
- To impart knowledge on various functional finishing process.
- To impart knowledge on effluent treatment.

Pre-requisites

- Textile Chemical Processing I

Course Outcomes

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

CO1	State the ingredients, methods of printing and styles of printing. Printing defects and limitations	Remember
CO2	Describe the printing procedure of cotton, polyester, silk, wool and garment. Discuss its faults- cause&remedies	Understand
CO3	Explain the procedure involved in finishing of cotton materials using various machines and procedure involved in finishing of denims.	Understand
CO4	Describe the procedure involved in crease resistance, water proof, water repellent, flame proof and value added finishing.	Understand
CO5	Analyse the various treatments of textile effluents, waste disposal & solid waste reduction techniquesand concepts of ISO14000.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	3	-	-	-	-	-	-	-	-	-	-	3	3	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO5	3	3	-	-	-	-	-	-	-	-	-	-	3	2	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. - Textile Technology								
60 TT 502 - Textile Chemical Processing II								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	3	0	0	45	3	40	60	100

Methods and Styles of Printing Essential ingredients and properties of printing paste; methods of printing- roller, screen (manual and flatbed) and rotary printing method; styles of printing-direct, discharge and resist. Modern Printing Techniques -transfer printing, foam printing; ink jet printing, UV printing 3D printing	[9]
Printing of Fabrics Printing of cotton fabric using direct, reactive, Natural dyes and pigment; printing of polyester with disperse dyes; printing of silk and wool with acid and basic dyes; digital printing; garment printing; printing faults- causes and remedies.	[9]
Finishing** Introduction to finishing- objectives- mechanical and chemical finishing; durable and temporary finishes on cotton fabrics; back filling; raising and brushing; calendaring; anti shrink finish; felt compacting; softening, Denim finishing- stone, enzyme wash; bio-polishing.	[9]
Special Finishes* Crease resist finish; water proof and repellent finishes for cotton and synthetics; flame resistance finishes for cellulosic's and blends; antimicrobial finishes; softeners; finishing of knits; value added finishing of garments;	[9]
Effluent Treatment*** Textile effluent–textile waste water problems, textile waste water characteristics, chemicals used in textile industry; treatment of textile effluents — primary, secondary and tertiary techniques for effluent treatment; solid waste reduction and disposal; concepts of ISO 14000 and ISO 8000.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Marie Christine Noel and Michael Cailloux, " Printed Textile Design" Paperback publisher, 2015
2.	K.L.Mittal and Thomas Bhaners,"Textile Finishing: Recent development and Future Trends" ISBN 9781119426769, 2017.
Reference(s):	
1.	Peter J. Hauser, "Advances in Treating Textile Effluent", InTech, October 2011
2.	Padmavankar, "Textile Effluent NCUTE", IIT, Publication, 2002.
3.	W.D.Schindler, "Chemical Finishing of Textiles", Wood Head Publishing Ltd, 2004.
4.	Prof. Dr. rer. nat. Hans-Karl Rouette, "Encyclopedia of Textile Finishing", Springer Verlag, 2002.

*SDG 9 – Industry Innovation and Infrastructure
**SDG 3 – Good Health and Well Being
***SDG 6 – Clean Water and Sanitation

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of hours
1.0	**Methods and Styles of Printing**	
1.1	Essential ingredients and properties of printing paste	1
1.2	Methods of printing	1
1.3	Roller and screen (manual and flatbed) method	1
1.4	Rotary printing method	1
1.5	Styles of printing – direct style of printing	1
1.6	Discharge and resist style of printing	1
1.7	Modern Printing Techniques -transfer printing	1
1.8	Foam printing and ink jet printing	1
1.9	UV printing and 3D printing	1
2.0	**Printing of Fabrics**	
2.1	Printing of cotton fabric using direct dyes	1
2.2	Reactive, Natural dyes and pigment	1
2.3	Printing of polyester with disperse dyes	1
2.4	Printing of silk and wool with acid dyes	1
2.5	Printing of silk and wool with basic dyes	1
2.6	Digital printing	1
2.7	Garment printing	1
2.8	Printing faults- causes	1
2.9	Printing faults- remedies	1
3.0	**Finishing**	
3.1	Introduction to finishing	1
3.2	Objectives of finishing	1
3.3	Mechanical and chemical finishing	1
3.4	Durable and temporary finishes on cotton fabrics	1
3.5	Back filling, raising and brushing	1
3.6	Calendaring, anti shrink finish and felt compacting	1
3.7	Softening and Denim finishing	1
3.8	Stone and enzyme wash	1
3.9	Bio-polishing	1
4.0	**Special Finishes**	
4.1	Crease resist finish	1
4.2	Water proof and repellent finishes for cotton	1
4.3	Water proof and repellent finishes for synthetic	1
4.4	Flame resistance finishes for cellulose	1
4.5	Flame resistance finishes for blends	1
4.6	Antimicrobial finishes	1
4.7	Softeners	1
4.8	Finishing of knits	1
4.9	Value added finishing of garments	1
5.0	**Effluent Treatment**	
5.1	Textile effluent–textile waste water problems	1
5.2	Textile waste water characteristics	1
5.3	Chemicals used in textile industry	1
5.4	Treatment of textile effluents	1
5.5	Primary and secondary techniques for effluent treatment	1
5.6	Tertiary techniques for effluent treatment	1
5.7	Solid waste reduction	1
5.8	Solid waste disposal	1
5.9	Concepts of ISO 14000 and ISO 8000	1

Course Designer(s)

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT 503	Woven Fabric Structure	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- Teaching the foundational principles of woven fabric design and how they influence fabric characteristics
- Instructing on various weaves and production techniques
- Providing insight into color theory and its application in woven fabrics
- Exploring concepts related to pile and multi-layer fabrics
- Disseminating knowledge on advanced fabric structures

Pre-requisites

- Nil

Course Outcomes

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

CO1	Elaborate on the components of fabric structure and basic weaving patterns.	Understand
CO2	Provide insights into the loom specifications for special weaves and color theory, while examining the interplay of color and weave effects.	Remember
CO3	Discuss the loom prerequisites and applications of additional thread figuring, while scrutinizing backed fabrics and the concept of Bedford cords.	Understand
CO4	Evaluate the design principles behind pile fabrics, multilayer fabrics, and double cloths.	Remember
CO5	Examine advanced weave structures and their corresponding loom requirements.	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	2	2	-
CO3	3	3	-	-	-	-	-	-	-	-	-	-	2	3	-
CO4	3	3	-	-	-	-	-	-	-	-	-	-	2	3	-
CO5	3	3	-	-	-	-	-	-	-	-	-	-	2	3	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT 503 - Woven Fabric Structure								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	3	0	0	45	3	40	60	100

Elements of Simple Structure * Elements of fabric structure and the devices used for analyzing the fabrics; elementary weaves — plain weave and its derivatives, twill weave and its derivatives, twill and twist interaction, twill angle; satin, sateen weaves and their derivatives; methods of representation on point paper; different types of drafts; loom requirements for producing primary weaves.	[9]
Special Weaves and Colour Theory ** Design, characteristics, loom requirements and uses of special weaves – ordinary honey comb, brighton honey comb, huck –a – back and its modifications, mock leno, crepe weaves; colour theory – light and pigment theory, modificationof colours, application of colours, colour and weave effects.	[9]
Compound Structure * Design, characteristics, loom requirements and uses of extra warp, extra weft figuring and backed fabrics; extra warp and extra weft figuring with single and two colours; backed fabrics, bed ford cords, plain faced, twill faced and wadded bed ford cords; welts, piques and wadded piques.	[9]
Pile Fabrics and Multi-Layer Fabrics *** Design, characteristics, loom requirements and uses of pile fabrics and multilayer fabrics –Warp pile: wire pile, fastwire pile. Weft Pile: plain back, twill back velveteen; Double cloths-classification, types of stitches, wadded double cloth, warp and weft wadded double cloth, centre stitched warp and weft way double cloth; multi-layer fabrics.	[9]
Advanced Structures ** Design, characteristics, loom requirements and uses of advanced structures – damask, brocades, tapestry, gauze and leno weaves, types of sheds, doup wire, easer bar motion and jumper motion; Russian cords – net leno.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Grosicki Z.J, "Advanced Textile Design" - Textile Institute, Universal book publisher ltd, Mumbai 2007.
2.	Grosicki Z. J., "Watson's Textile Design and Colour", Vol.1, Woodhead Publications, Cambridge England, 2004
Reference(s):	
1.	B.K.Behra and P.K.Hari, "Woven Textile Structure (Theory and Application), Woodhead Publishing Limited, 2010.
2.	Grosicki Z J, "Advanced Textile Design and Color" – Butterworths London, 2004.
3.	Seyam A. M., "Structural Design of Woven Fabrics, Theory and Practice", Textile Institute, Manchester, 2002.

***SDG 9: Industry, Innovation, and Infrastructure**

****SDG 12: Responsible Consumption and Production**

*****SDG 8: Decent Work and Economic Growth**

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

BoS Chairman
Head of the Department
Department of Textile Technology
K S Rangasamy College of Technology
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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Elements of Simple Structure**	
1.1	Introduction of weave structure	1
1.2	Plain weave and its derivatives	1
1.3	Warp rib, weft rib and Matt rib	1
1.4	Twill weave and its derivatives	2
1.5	Pointed , Herring bone and Broken twill	1
1.6	Satin & Sateen Weaves , Types	2
1.7	Types of Draft	1
2.0	**Special Weaves and Colour Theory**	
2.1	Loom requirements and uses of special weaves	1
2.2	Honey comb weaves and its types	1
2.3	Brighton honey comb	1
2.4	Huck –a – back and its modifications	1
2.5	Mock leno weaves	1
2.6	Crepe weaves & types	1
2.7	Colour theory – light and pigment theory	1
2.8	Modificationof colours,	1
2.9	Application of colours, colour and weave effects	1
3.0	**Compound Structure**	
3.1	Introduction of extra warp, extra weft	1
3.2	Methods of producing extra warp and weft	1
3.3	Extra warp with single and two colours	1
3.4	Extra weft f with single and two colours	1
3.5	Principles of backed fabric	1
3.6	Bed ford cords - Plain faced	1
3.7	Twill faced and wadded bed ford cords	1
3.8	Welts, piques and wadded piques	2
4.0	**Pile Fabrics and Multi-Layer Fabrics**	
4.1	Pile fabrics – Warp pile and wire pile	1
4.2	Terry weaves - stripe and check	1
4.3	Double cloths and its classification	1
4.4	Types of stitches	1
4.5	Wadded double cloth	1
4.6	Warp and weft wadded double cloth	1
4.7	Centre stitched warp and weft way double cloth	2
4.8	Multi-layer fabrics	1
5.0	**Advanced Structures**	
5.1	Loom requirements and uses of advanced structures	1
5.2	Damask and Brocades design	1
5.3	Tapestry and gauze	1
5.4	Leno weaves	1
5.5	types of sheds and Doup wire	2
5.6	Easer bar motion and jumper motion	1
5.7	Russian cords structure	1
5.8	Net leno structure	1

Course Designer(s)

1 C

Passed in BoS Meeting held on 21/11/2023
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BoS Chairman
Head of the Department
Department of Textile Technology
K S Rangasamy College of Technology
TIRUCHENGODE-637 215

60 TT 504	Technical Textiles I	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- To share information about different fibers utilized in industrial textiles.
- To provide insights into the realm of medical textiles.
- To gain a foundational understanding of geotextiles.
- To convey knowledge about protective textiles.
- To explore the diverse applications of textiles in the field of transportation.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Summarize the categorization of technical textiles with the fibers, yarns, and fabric varieties employed in technical textiles	Understand
CO2	Understand the role of textile materials in the medical textiles product development.	Understand
CO3	Categorize the essential properties for fabric components utilized and applications of Geo textiles.	Analyse
CO4	State the functions and diverse criteria for protective textiles.	Analyse
CO5	Outline the functions and various requirements of transportation textiles.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	-	2	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO4	2	2	-	-	-	-	-	-	-	-	-	-	-	-	2
CO5	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 TT 504 – Technical Textiles I								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	3	0	0	45	3	40	60	100

Introduction, Fibres & Fabric Structures* Introduction: Technical Textiles - Scope of technical textiles.Classification of technical textiles - Fibres used in Technical textiles .Technical yarns - Staple yarns - Mono and multi filament yarns. Technical fabrics: knitted - woven - nonwoven and braided structures.	[9]
Medical Textiles** Medical Textiles: Introduction - materials used & its requirements .Classification of Medical textiles - Textiles for implantations - Non- implantations textiles - Extra-corporeal devices - Healthcare & Hygiene Products.	[9]
Geo Textiles**** Geo Textiles: Introduction to geo textiles and geosynthetics - Fibres and its selection for Geo textiles - Functions of Geo textiles - Engineering properties of Geo textiles - Geo textile structure - Applications for natural Geo textiles and geosynthetics.	[9]
Protective Textiles** Protective Textiles: Introduction- Selection of protective clothing materials- fibres and fabrics for Protective Textiles- Textiles for environmental protection- Thermal insulation textiles - Biological and chemical warfare protective textiles.	[9]
Transportation Textiles* Textiles in Transportation- car seats- air bag- seat belt- filters- Belts- Tyre cords and hoses. Textiles in Rail applications- Textiles in aircraft and marine applications.	[9]
Total Hours:	**45**

Text Book(s):	
1.	A.R.Horrocks& S.C. Anand (Edrs.), "Handbook of Technical Textiles", The Textile Institute, Manchester, U.K.,WoodheadPublishing Ltd., Cambridge, England, 2000.
2.	E.Willusz, "Military Textiles", Woodhead Publishing Ltd, 2008.
3.	Richard. A.Scott, "Textiles for Protection", CRC press, Woodhead Publication, USA, 2005.
Reference(s):	
1.	N.W.M. John, "Geotextiles", Blackie, London, ISBN: 0-216-91995-9, 1987.
2.	S. Adanur "Wellington Sears Handbook of Industrial Textiles", Technomic Publishing Co. Inc., Lancaster, Pennsylvania, ISBN:1-56676-340-1, 1995.
3.	S. Anand, "Medical Textiles", Text. Inst., 1996, ISBN: 185573317X.
4.	T.Matsuo, "Fiber materials for Advanced Technical Textiles", CRC publication, 2008.

*SDG 9 – Industry Innovation and Infrastructure
**SDG 3 – Good Health and Well Being
***SDG 15 – Life on Land

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Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of hours
1.0	**Introduction, Fibres and Fabric Structures**	
1.1	Introduction : Technical Textiles	1
1.2	Scope of technical textiles	1
1.3	Classification of technical textiles	1
1.4	Fibres used in Technical textiles	1
1.5	Technical yarns - Staple yarns,Mono and multi filament yarns.	2
1.6	Technical fabrics: knitted and woven structures	2
1.7	Nonwoven and braided structures	1
2.0	**Medical Textiles**	
2.1	Medical Textiles: Introduction	1
2.2	Materials used & its requirements.	2
2.3	Classification of Medical textiles	1
2.4	Textiles for implantations	1
2.5	Non- implantations textiles	1
2.6	Extra-corporeal devices	2
2.7	Healthcare & Hygiene Products	1
3.0	**Geo Textiles**	
3.1	Geo Textiles: Introduction to geo textiles and geosynthetics	1
3.2	Fibres and its selection for Geo textiles	2
3.3	Functions of Geo textiles	1
3.4	Engineering properties of Geo textiles	1
3.5	Geo textile structures	2
3.6	Applications for natural Geo textiles	1
3.7	Applications for geosynthetics	1
4.0	**Protective Textiles**	
4.1	Protective Textiles: Introduction	1
4.2	Selection of protective clothing materials	2
4.3	Fibres and fabrics for Protective Textiles	2
4.4	Textiles for environmental protection	1
4.5	Thermal insulation textiles	1
4.6	Biological and chemical warfare protective textiles.	2
5.0	**Transportation Textiles**	
5.1	Textiles in Transportation	1
5.2	Car seats and air bag	1
5.3	Seat belt, filters and Belts	1
5.4	Tyre cords and hoses	2
5.5	Textiles in Rail applications	1
5.6	Textiles in aircraft and marine applications	2

Course Designer(s)

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60MY003	Startups and Entrepreneurship	Category	L	T	P	Credit
		MY	2	0	0	2*

Objectives

- To Learn basic concepts in entrepreneurship, develop mind-set and skills necessary to explore entrepreneurship
- To provide practical proven tools for transforming an idea into a product or service that creates value for others.
- To Comprehend the process of opportunity identification through design thinking, identify market potential and customers while developing a compelling value proposition solution and prototypes
- To create business plan, conduct financial analysis and feasibility analysis to assess the financial viability of a venture ideas & solutions built with domain expertise
- To Prepare and present an investible pitch deck of their practice venture to attract stakeholders

Pre-requisites

- Basic knowledge of reading and writing in English

Course Outcomes

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

CO1	Develop an entrepreneurial mindset and appreciate the concepts of design thinking, entrepreneurship and innovation	Understand
CO2	Apply process of problem -opportunity identification and validation through human centred approach to design thinking in building solutions	Apply
CO3	Understand market types, conduct market estimation, identify customers, create customer persona, develop the skills to create a compelling value proposition and build a Minimum Viable Product	Apply
CO4	Create business plan, conduct financial analysis and feasibility analysis to assess the financial viability of a venture	Apply
CO5	Prepare and deliver an investible pitch deck of their practice venture to attract stakeholders	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	3	3	1	3	1	2	1	-	2	2	3	3	-
CO2	2	3	3	2	2	-	2	2	2	-	2	2	2	3	-
CO3	3	2	3	1	2	-	-	-	1	3	1	3	3	2	-
CO4	3	3	3	3	3	2	2	1	-	1	3	3	3	3	-
CO5	3	2	3	3	3	-	-	2	-	-	3	2	3	2	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Pitch Deck final submission & Viva voce
	Milestone 1 (25 Marks)	Milestone 2 & 3 (25 Marks)	
Remember	10	-	50
Understand	05	10	
Apply	10	15	
Analyse	-	-	
Evaluate	-	-	
Create	-	-	
Total	25	25	

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TIRUCHENGODE-637 215

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
Common to ALL Branches								
60 MY 003 – Startups and Entrepreneurship								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	2	0	0	30	2*	100	-	100

Introduction to Entrepreneurship & Entrepreneur Meaning and concept of Entrepreneurship, the history of Entrepreneurship development, Myths of Entrepreneurship, role of Entrepreneurship in Economic Development, Agencies in Entrepreneurship Management and Future of Entrepreneurship. The Entrepreneur: Meaning, the skills required to be an entrepreneur, the entrepreneurial decision process, Role models, Mentors and Support system.Innovation and Creativity, types of innovations, Innovations in current scenario	[6]
Problem-Opportunity Identification, Customers Discovery and competitive advantage Understanding the Problem and opportunity, define problem using Design thinking principles and validate problem. Exploring market types and estimating the market size, knowing your customer and consumer, Customer segmentation and creating customer personas. Importance of Value Proposition, Value Proposition Canvas, Developing Problem-solution fit, Competition analysis, Blue ocean strategy, Competitive positioning and understanding unique selling points.	[6]
Business model and build your MVP Introduction to Business model and types, Lean approach, 9 block lean canvas model, riskiest assumptions to Business models. Prototyping, building a Minimum viable product, Hypothesis testing and MVP Validation, MVP Iteration-Importance of Build - Measure – Learn approach	[6]
Business Plan, Financial feasibility and Managing growth Business planning: components of Business plan- Sales plan, People plan and financial plan, Preparing a business plan. Financial Planning: Types of costs, preparing the financial plan using financial template, understanding basics of Unit economics and analyzing Growth and the financial performance	[6]
Go To Market Strategies and Funding Introduction to Go to market strategies, start-up branding and its elements, Selecting the Right Channel, creating digital presence, building customer acquisition strategy. Choosing a form of business organization specific to your venture, identifying sources of funds: Debt & Equity, Map the Start-up Lifecycle to Funding Options, Build an Investor ready pitch deck.	[6]
Total Hours:	**30**

Text Book(s):	
1.	Stephen Key, “One Simple Idea for Startups and Entrepreneurs: Live Your Dreams and Create Your Own Profitable Company” 1st Edition, Tata Mc Grawhill Company, New Delhi, 2013.
2.	Charles Bamford and Garry Bruton, “Entrepreneurship: The Art, Science, and Process for Success”, 2nd Edition, Tata Mc Grawhill Company, New Delhi, 2016.
Reference(s):	
1.	Philip Auerswald, “The Coming Prosperity: How Entrepreneurs Are Transforming the Global Economy”, Oxford University Press, 2012.
2.	Janet Kiholm Smith; Richard L. Smith Richard T. Bliss, “Entrepreneurial Finance: Strategy, Valuation and Deal Structure, Stanford Economics and Finance”, 2011.
3.	Edward D. Hess, “Growing an Entrepreneurial Business: Concepts and Cases”, Stanford Business Books, 2011.
4.	Ignite program, wadhwani platform, Entrepreneurship, NPTEL online course By Prof. C Bhaktavatsala Rao | IIT Madras

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

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Introduction to Entrepreneurship & Entrepreneur**	
1.1	Meaning and concept of Entrepreneurship and the history of Entrepreneurship development	1
1.2	The Entrepreneur: Meaning, the skills required to be an entrepreneur, the entrepreneurial decision process,	1
1.3	Myths of Entrepreneurship, How to Become a Successful Entrepreneur - Dr Romesh Wadhwani (Platform on boarding)	1
1.4	Role models, Mentors and Support system- Masterclass on My Story - Joshua Salins	1
1.5	Role of Entrepreneurship in Economic Development, Agencies in Entrepreneurship Management and Future of Entrepreneurship	1
1.6	Innovation and Creativity, types of innovations, Innovations in current scenario, Concepts of Entrepreneurial Thinking, General Enterprising tendency test	1
2.0	**Problem-Opportunity Identification, Customers Discovery and competitive advantage**	
2.1	Understanding the Problem and opportunity, define problem using Design thinking principles and validate problem. Case study and Fireside chat – Desi Hangover	1
2.2	Identifying a problem for practice venture and filling Problem statement canvas (Handout week 1 - class activity)	1
2.3	Customer and markets discovery , knowing your customer and consumer, Customer segmentation and Exploring market types and estimating the market size. Case study and Fireside chat – Verloop	1
2.4	Creating customer personas & Market estimation (Handout week 2 - class activity)	1
2.5	Importance of Value Proposition, Introduce Value Proposition Canvas, Developing Problem-solution fit. Case study and Fireside chat – Honey Twigs	1
2.6	Competition analysis, Blue ocean strategy, Competitive positioning and understanding unique selling points. Case study and Fireside chat on Inzpira Fill Value Proposition Canvas (Handout week 3 - class activity) and Competition analysis framework (Handout week 5 - class activity) **Briefing on Assignment 1 - Milestone 1**	1
3.0	**Business model and Build your MVP**	
3.1	Introduction to Business model and types. Case study and Fireside chat – NUOS	1
3.2	Lean approach, 9 block lean canvas model, riskiest assumptions to Business models	1
3.3	Class Activity- Fill Lean canvas for you idea and understand revenue model (Handout week 6)	1
3.4	Prototyping, Meaning of MLP , Difference between MLP and MVP, How to build an MLP? Different types MLP that you can build. Case study and Fireside chat – KNORISH	1
3.5	Hypothesis testing and MVP Validation, MVP Iteration-Importance of Build - Measure – Learn approach	1
3.6	Class Activity- Fill MVP framework (Handout week 7) and learn validation	1
4.0	**Business Plan, Financial feasibility and Manging growth**	
4.1	Business planning: components of Business plan- Sales plan, People plan and financial plan, Preparing a business plan. Case study and Fireside chat – Bodh Gems	1
4.2	Financial Planning: Types of costs, preparing the financial plan using financial template (Handout week 9)	1
4.3	Class activity - starting up costs, COGS, Sales plan and people plan template.	1
4.4	Class activity - One year P&L projection, Breakeven Analysis, Five year projection	1

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4.5	Understanding basics of Unit economics and analyzing Growth and the financial performance	1
4.6	Class activity - Financial template - Unit economics (Handout week 12)	1
5.0	**Go To Market Strategies and Funding**	
5.1	Introduction to Go to market strategies, start-up branding and its elements, Selecting the Right Channel	1
5.2	Creating digital presence, building customer acquisition strategy.	1
5.3	Class activity: Handout week 10 - create your GTM strategy	1
5.4	Choosing a form of business organization specific to your venture	1
5.5	Identifying sources of funds: Debt & Equity, Map the Start-up Lifecycle to Funding Options	1
5.6	Class activity - Visit relevant GOI websites, other sites to help students explore funding opportunities and **briefing on final submission of the pitch deck** Build an Investor ready pitch deck, What Should You Cover in Your Pitch Deck? Art of pitching and storytelling	1

Course Designer(s)

1. Dr.N.Tiruvenkadam - tiruvenkadam@ksrct.ac.in

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TIRUCHENGODE-637 215

50 TT 5P1	Textile Chemical Processing Laboratory	Category	L	T	P	Credit
		PC	0	0	3	1.5

Objectives

- To acquire practical knowledge on Direct style of printing.
- To acquire practical knowledge on discharge and resist style of printing.
- To acquire practical knowledge on finishing.
- To acquire practical knowledge on special finishing.
- To acquire practical knowledge on testing.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Practice the direct style of printing using pigments and dyes.	Understand
CO2	Perform the discharge and resist style of printing process.	Understand
CO3	Apply Tie & Dye style of printing and cationicSofteners finishing	Apply
CO4	Practice the fragrance, water repellent finish and shrinkage test.	Apply
CO5	Determine the various colour fastnesses rubbing Washing and Perspiration	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	-	-	-	-	-	-	2	-	2	-	3	2	-
CO2	3	3	-	3	3	-	-	-	2	-	2	-	3	2	-
CO3	3	3	-	-	-	-	-	-	2	-	2	-	3	2	-
CO4	3	3	3	3	3	-	-	-	2	-	2	-	3	2	-
CO5	3	3	3	3	3	-	-	-	2	-	2	-	3	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	Lab	Activity		
Remember	-	-	-	-
Understand	10	5	20	20
Apply	40	10	40	40
Analyse	-	10	40	40
Evaluate	-	-	-	-
Create	-	-	-	-
Total	50	25	100	100

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K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. - Textile Technology								
60 TT 5P1 - Textile Chemical Processing Laboratory								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	0	0	3	45	1.5	60	40	100

List of Experiments:

1. Direct style of printing on cotton fabric using pigment printing.
2. Direct style of printing on cotton fabric using Vinyl sulphone Reactive Dyes.
3. Discharge style of printing on cotton fabric – white & colour base
4. Resist style of printing on cotton fabric – white & colour base
5. Tie & Dye style of printing on cotton fabric.
6. Finishing of cotton fabric using cationicSofteners.
7. Finishing of cotton fabric using fragrance/aroma finish.
8. Determination of water repellent finish and shrinkage test.
9. Determination of colour fastness to rubbing and Washing.
10. Determination of colour fastness to Perspiration.

Design Experiments:

1. Design a flower shape in direct style of Printing by using reactive dyes.
2. Design a national flag in the tie and dye style method.

Total Hours: 45

Lab Manual	
1.	"Textile Chemical Processing Lab Manual", Department of Textile Technology, KSRCT.

* SDG 6 - Clean Water and Sanitation

** SDG 9 – Industry Innovation and Infrastructure

***SDG 12 – Responsible Consumption and Production

Course Designer(s)

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

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Approved in Academic Council Meeting held on 23/12/2023

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

60 TT 5P2	Fabric Structure Laboratory	Category	L	T	P	Credit
		PC	0	0	3	1.5

Objectives

- Educate on the intricacies of various weave structures.
- Convey knowledge on utilizing different fabric parameters for designing based on specific applications.
- Offer foundational understanding of color theory for its practical application in fabric design and construction
- Provide exposure to the analysis of diverse fabric structures, emphasizing construction details.
- Impart knowledge on color theory applicable to fabric production, encompassing various color combinations and designs.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Acquire understanding of fabric structure elements and basic weaving patterns.	Analyse
CO2	Elaborate on the loom specifications needed for unique weaves and explore the principles of color theory.	Analyse
CO3	Delve into the loom prerequisites and applications of additional thread figuring.	Analyse
CO4	Evaluate backed fabrics and grasp the concepts of mock leno and bedford cords.	Analyse
CO5	Elaborate on the loom specifications and applications of sophisticated weave structures.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	2	-	-	-	-	-	-	2	-	-	-
CO2	2	2	-	-	-	-	-	-	-	-	-	2	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	2	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	2	-	-	-
CO5	3	3	2	-	-	-	-	-	-	-	-	2	-	-	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	Lab	Activity		
Remember	-	-	-	-
Understand	-	-	-	-
Apply	-	-	25	25
Analyse	50	25	75	75
Evaluate	-	-	-	-
Create	-	-	-	-
Total	50	25	100	100

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TIRUCHENGODE-637 215

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 TT 5P2 – Fabric Structure Laboratory								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	0	0	3	45	1.5	60	40	100

List of Experiments:

1. Different types of plain weave fabrics (Casement, poplin, cambric, long cloth, & mull cloth).*
2. Twill, herring bone and pointed twill weaves
3. Satin and Sateen weaves
4. Honeycomb weave, Huck-a-back weave & Mock Leno
5. Extra thread figuring – extra warp and weft figuring **
6. Backed and Velvet fabrics
7. Double cloth
8. Gauze and Leno ***
9. Bedford cords
10. Single jersey, rib, interlock and purl structures and derivatives of jersey structures.

Design Experiments:

11. Design and produce the following fabric patterns by using hand loom or power loom
    A) Plain Weave
    B) Twill Weave
12. Design and produce the following fabric patterns by using hand loom or power loom
    A) Honeycomb Weave
    B) Huck- A –Back Weave

Total Hours: 45

Lab Manual	
1.	"Fabric Structure Lab Manual", Department of Textile Technology, KSRCT.

Course Designer(s)

1. Mr.M.Arunkumar – arunkumar@ksrct.ac.in

Passed in BoS Meeting held on 21/11/2023
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Head of the Department
Department of Textile Technology
K S Rangasamy College of Technology
TIRUCHENGODE-637 215

60 TT 5P3	Design Thinking and Innovation Laboratory	Category	L	T	P	Credit
		PC	0	0	2	1

Objectives

- Study a problem from multiple perspectives
- Learn how to frame the design challenge properly.
- Learn how to ideate, prototype and Iterate solutions.
- Learn from the overall design process how to create value as entrepreneurs
- Learn how to design successful products or enterprises

Pre-requisites

- Nil

Course Outcomes

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

CO1	Identify an Opportunity from a Problem	Understand
CO2	Frame a Product/Service Idea	Analyse
CO3	Empathize with the customers	Apply
CO4	Design and develop a Prototype	Analyse
CO5	Pitch their idea	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	2	3	-	-	-	-	-	-	-	-	3	2	-
CO2	3	3	3	3	-	-	-	-	-	-	-	-	3	3	-
CO3	3	3	3	3	-	-	-	-	-	-	-	-	3	3	-
CO4	3	3	3	3	-	-	-	3	3	3	-	3	3	3	3
CO5	3	3	3	3	-	-	-	3	3	3	-	3	3	3	3
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	Lab	Activity		
Remember	-	-	-	-
Understand	10	05	20	20
Apply	20	10	40	40
Analyse	20	10	40	40
Evaluate	-	-	-	-
Create	-	-	-	-
Total	50	25	100	100

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BoS Chairman
Head of the Department
Department of Textile Technology
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TIRUCHENGODE-637 215

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. –Textile Technology								
60 TT 5P3 - Design Thinking and Innovation Laboratory								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	0	0	2	30	1	60	40	100

Introduction to Design Thinking LRI Assessment, Introduction to Design Thinking, Understanding the Mindsets-Empathy, Optimism, Embrace Ambiguity, Make it, Learn from Failure, Iterate, Create Confidence, Creativity Convergent & Divergent Thinking	[6]
Design Thinking Methodology The 5 Stages of the Design Thinking Process-Empathise, Define (the problem), Ideate, Prototype, and Test.	[6]
Ideation tools & exercises. Sample Design Challenge, Introduction to the Design Challenge Themes, Storytelling and Tools for Innovation	[6]
Empathize-Understand customers: Empathy Maps, Empathise-Step into customers shoes Customer Journey Maps, Define-Analysis & Drawing Inferences from Research	[6]
The Design Challenge: Define the Design Challenge, Prototyping & Iteration- Feasibility Study, Testing-Documentation and the Pitching.	[6]
Total Hours:	30

Text Book(s):	
1.	Design Thinking for Strategic Innovation: What They Can't Teach You at Business or Design School - IdrisMootee.
Reference(s):	
1.	1. Zero to One: Note on Start-Ups, or How to Build the Future
2.	2. The Lean Startup: How Constant Innovation Creates Radically Successful Businesses
3.	3. Start With Why: How Great Leaders Inspire Everyone To Take Actions.

*SDG:9 - Industry Innovation and Infrastructure

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60 CG 0P4	CAREER SKILL DEVELOPMENT IV	Category	L	T	P	Credit
		CG	0	0	2	1*

Objectives

- To help learners improve their vocabulary and enable them to use words appropriately in different academic and professional contexts.
- To help learners develop strategies that could be adopted while reading texts.
- To help learners acquire the ability to speak and write effectively in English in real life and career related situations.
- Improve listening, observational skills, and problem-solving capabilities
- Develop message generating and delivery skills

Pre-requisites

- Basic knowledge of Arithmetic and Logical Reasoning

Course Outcomes

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

CO1	Compare and contrast products and ideas in technical texts.	Analyse
CO2	Identify cause and effects in events, industrial processes through technical texts	Analyse
CO3	Analyse problems in order to arrive at feasible solutions and communicate them orally and in the written format.	Analyse
CO4	Report events and the processes of technical and industrial nature.	Apply
CO5	Articulate their opinions in a planned and logical manner, and draft effective résumés in context of job search.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2	2	3	-	3	-	-	-	2	3	3	3	-	2
CO2	3	3	3	3	-	2	-	-	-	2	3	3	3	-	2
CO3	2	2	2	2	-	3	-	-	-	2	3	3	3	-	2
CO4	3	3	3	3	-	2	-	-	-	2	3	3	3	-	2
CO5	3	3	3	3	-	2	-	-	-	2	3	3	2	-	2
3 - Strong; 2 - Medium; 1 - Some															

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K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 CG 0P4 - Career Skill Development IV								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	0	0	2	30	1*	100	00	100

Verbal & Analytical Reasoning* ** * Seating Arrangements – Analytical Reasoning (PUZZELS) – Machin input and output - Coded Inequality – Eligibility Test	**[6]**
Quantitative Aptitude - Part – 4 * ** * Permutation and Combination - Probability - Quadratic equation - Geometry – Clock – Calendar – Logarithmic	**[6]**
Non-Verbal Reasoning * ** * Series Completion of Figures – Classification – Courting of figure – Figure matrix – Embedded Figure – Complete Figure – Paper Cutting and Folding – Mirror images and Water Images	**[6]**
Quantitative Aptitude - Part – 5 * ** * Mensuration of Area, Volume and Surface area in 2D and 3D Shapes – 2D Shapes – Square, Rectangle, Triangle, Circle, etc. - 3D Shapes – Cube, Cuboid , Sphere , Cone , etc.	**[6]**
Data Interpretation and Analysis * ** * Data interpretation Based on text - Data interpretation Based on Tabulation , Pie chart , Bar graph , And Line graph – Venn Diagram - Data sufficiency	**[6]**
Total Hours	**30**
Reference(s):	

1.	Aggarwal, R.S. *'A Modern Approach to Verbal and Non-verbal Reasoning'*, Revised Edition 2008,Reprint 2009,S.Chand & Co Ltd., New Delhi.
2.	Abhijit Guha, *'Quantitative Aptitude'*, McGraw Hill Education, 6th edition, 2016
3.	Dinesh Khattar, 'Quantitative Aptitude For Competitive Examinations', Pearson Education (2020)
4.	Anne Thomson, *'Critical Reasoning: A Practical Introduction'* Lexicon Books, 3rd edition, 2022. Warszaw

*** SDG- 04- Quality Education**
****SDG 8 – Decent work and Economic growth**
*****SDG 9 – Industry, innovation and Infrastructure**

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Course Contents and Lecture Schedule		
S.No	**Topic**	**No. of Hours**
1	**Verbal & Analytical Reasoning**	
1.1	Seating Arrangements	1
1.2	Analytical Reasoning (PUZZELS)	1
1.3	Machin input and output	1
1.4	Coded Inequality	1
1.5	Eligibility Test	2
2	**Quantitative Aptitude - Part – 4**	
2.1	Permutation and Combination	1
2.2	Probability	1
2.3	Quadratic equation – Geometry	1
2.4	Clock – Calendar	1
2.5	Logarithmic	2
3	**Non-Verbal Reasoning**	
3.1	Series Completion of Figures – Classification	1
3.2	Courting of figure – Figure matrix	1
3.3	Embedded Figure – Complete Figure	1
3.4	Paper Cutting and Folding	1
3.5	Mirror images and Water Images	2
4	**Quantitative Aptitude - Part – 5**	
4.1	Mensuration of Area, Volume	1
4.2	Mensuration of Volume	1
4.3	Surface area in 2D and 3D Shapes	1
4.4	2D Shapes – Square, Rectangle, Triangle, Circle, etc.	1
4.5	3D Shapes – Cube, Cuboid , Sphere , Cone , etc.	2
5	**Data Interpretation and Analysis**	
5.1	Data interpretation Based on text	1
5.2	Data interpretation Based on Tabulation, Pie chart	1
5.3	Bar graph , And Line graph	1
5.4	Venn Diagram	1
5.5	Data sufficiency	2

Course Designer(s)

1. R. Poovarasan- poovarasan@ksrct.ac.in

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT E 21	Fibres for Smart Textiles	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- Overview smart textiles' history, trends, and future.
- Detail properties and uses of diverse fibres.
- Explore conductive and responsive fibre fabrication.
- Introduce coatings and composite fibres.
- Promote hands-on application in real-world scenarios

Pre-requisites

- Fibre Science

Course Outcomes

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

CO1	Describe smart textiles and their applications.	Remember
CO2	Evaluate fibres for specific textile uses.	Understand
CO3	Apply fabrication methods for advanced fibres.	Understand
CO4	Develop textiles with functional coatings and composites.	Understand
CO5	Communicate textile concepts effectively through presentations and reports.	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	2	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	2	2	-	-	-	-	-	-	-	-	-	3	1	-
CO3	3	2	2	-	-	-	-	-	-	-	-	-	2	2	-
CO4	3	2	2	-	-	-	-	-	-	-	-	-	2	2	-
CO5	3	2	2	-	-	-	-	-	-	-	-	-	3	1	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 TT E 21 - Fibres for Smart Textiles								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	3	0	0	45	3	40	60	100

Introduction to Smart Textiles Overview of smart textiles and their applications – Importance of fibres in smart textile development – Historical background and evolution of smart textiles – Current trends and future prospects in the smart textiles industry.	[9]
Fundamentals of Fibres for Smart Textiles Classification of fibres suitable for smart textiles natural, synthetic, and hybrid – Properties of fibres relevant to smart textiles: conductivity, flexibility, durability – Comparison of different fibre types in terms of their suitability for specific smart textile applications – Case studies highlighting successful integration of fibres in smart textile products	[9]
Conductive Fibres and Their Applications Introduction to conductive fibres and their properties – Fabrication methods for producing conductive fibres: spinning, coating, doping – Applications of conductive fibres in smart textiles : e-textiles, wearable electronics, health monitoring systems – Challenges and future directions in the development of conductive fibres for smart textiles.	[9]
Responsive Fibres and Their Applications Overview of responsive fibres and their stimuli-responsive behavior :temperature, moisture, light – Fabrication techniques for producing responsive fibres : electrospinning, phase transition, chemical modification – Applications of responsive fibres in smart textiles :adaptive clothing, responsive sensors, energy harvesting.	[9]
Functional Coatings and Composite Fibres Introduction to functional coatings for enhancing fibre properties: water resistance, antimicrobial, UV protection – Methods for applying functional coatings to fibres : dipping, spraying, layer-by-layer assembly – Composite fibres: combining different materials to achieve desired functionalities : strength, conductivity – Examples of smart textile products incorporating functional coatings and composite fibres.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Pailes-Friedman, R. (2016). Smart Textiles for Designers: Inventing the Future of Fabrics. Laurence King Publishing.
2.	McLoughlin, J., & Sabir, T. (Eds.). (2018). High-Performance Apparel: Materials, Development, and Applications. Elsevier.
Reference(s):	
1.	Dias, T. (2015). Electronic Textiles: Smart Fabrics and Wearable Technology. Woodhead Publishing.
2.	McCann, J., & Bryson, D. (Eds.). (2014). Textile Led Design for the Active Ageing Population. Woodhead Publishing.
3.	Pan, N., & Sun, G. (Eds.). (2011). Functional Textiles for Improved Performance, Protection and Health. Woodhead Publishing.

*__SDG 9 Industry, Innovation, and Infrastructure__

**__SDG 12 Responsible Consumption and Production__

*** **SDG 14 Life below Water**

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of hours
1.0	**Introduction to Smart Textiles**	
1.1	Overview of Smart Textiles	1
1.2	Importance of Fibres in Smart Textile Development	2
1.3	Historical Background of Smart Textiles	1
1.4	Evolution of Smart Textiles	1
1.5	Current Trends in Smart Textiles	1
1.6	Future Prospects in the Smart Textiles Industry	2
2.0	**Fundamentals of Fibres for Smart Textiles**	
2.1	Introduction to Fibres Suitable for Smart Textiles	1
2.2	Classification of Fibres: Natural, Synthetic, Hybrid	1
2.3	Properties Relevant to Smart Textiles: Conductivity	1
2.4	Properties Relevant to Smart Textiles: Flexibility	1
2.5	Properties Relevant to Smart Textiles: Durability	1
2.6	Comparison of Fibre Types for Specific Applications	2
2.7	Case Studies on Fibre Integration in Smart Textile Products	2
3.0	**Conductive Fibres and Their Applications**	
3.1	Introduction to Conductive Fibres	1
3.2	Properties of Conductive Fibres	1
3.3	Fabrication Methods: Spinning, Coating, Doping	2
3.4	Applications in E-textiles, Wearable Electronics	1
3.5	Applications in Health Monitoring Systems	1
3.6	Challenges and Future Directions	2
4.0	**Responsive Fibres and Their Applications**	
4.1	Overview of Responsive Fibres	1
4.2	Stimuli-Responsive Behavior: Temperature, Moisture, Light	2
4.3	Fabrication Techniques: Electrospinning, Phase Transition	3
4.4	Applications in Adaptive Clothing	2
4.5	Applications in Responsive Sensors and Energy Harvesting	1
5.0	**Functional Coatings and Composite Fibres**	
5.1	Introduction to Functional Coatings	1
5.2	Enhancing Fibre Properties: Water Resistance, Antimicrobial	1
5.3	UV Protection and Other Coatings	1
5.4	Methods for Applying Coatings: Dipping, Spraying	1
5.5	Layer-by-Layer Assembly	1
5.6	Introduction to Composite Fibres	1
5.7	Combining Materials for Desired Functionalities: Strength, Conductivity	1
5.8	Examples of Smart Textile Products Incorporating Functional Coatings and Composite Fibres	2

Course Designer(s)

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT E 22	Functional Finishes	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To impart knowledge on chemical finishing.
- To impart knowledge on Hand Building Finishes and effects.
- To impart knowledge on Ultraviolet Protection and Elastomeric Finishes.
- To impart knowledge on Antimicrobial and Blood Repellent Finishes.
- To impart knowledge on Novel Finishes on textile fabrics.

Pre-requisites

- Textile Chemical Processing I

Course Outcomes

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

CO1	Explain the Importance, methods of chemical finishing. Softening finishes: Mechanisms of the softening effect.	Remember
CO2	Describe the hand building effect and valuation methods. Non-Slip Finishes.	Understand
CO3	Explain the mechanism of UV protection, EMI Shielding, elastomeric effect and evaluation.	Understand
CO4	Discuss the procedure involved in antimicrobial and blood repellent finish. Chemicals/agents used and their interaction.	Understand
CO5	Analyse the various novel finishes and Smart textiles by chemical finishing.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	-	-	-	-	-	-	-	-	-	-	3	3	-
CO2	3	3	-	-	-	-	-	-	-	-	-	-	3	2	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-	3	3	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. - Textile Technology								
60 TT E 22 – Functional Finishes								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	3	0	0	45	3	40	60	100

Chemical Finishing Importance, methods of chemical finishing. Softening finishes: Mechanisms of the softening effect. Types Softeners. Evaluation methods. Standards; Troubleshooting.	[9]
Hand Building Finishes The hand building effect. Textiles with hand building finishes. Evaluation methods. Non-Slip Finishes: Mechanisms, Application methods and combinability. Evaluation, standards; Trouble shooting.	[9]
Ultraviolet Protection and Elastomeric Finishes Mechanism of UV protection. EMI Shielding. Mechanism of elastomeric effect. Evaluation. standards Troubleshooting.	[9]
Antimicrobial and Blood Repellent Finishes Mechanism. Properties of an effective antimicrobial and blood repellent finish. Chemicals/agents used and their interaction. Evaluation. standards; Trouble shooting.	[9]
Novel Finishes Anti-odour and fragrance finishes. Mosquito repellent finish. Conductive finish. Finishes using plasma, radiation technologies. Application of nano and biotechnology in finishing. Micro encapsulation technique and finishing. Smart textiles by chemical finishing.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Mohammad Shahid, Ravindra Adivarekar “Advances in Functional Finishing of Textiles” Springer nature Singapore, ISBN:9789811536694, 9811536694, 2020.
2.	Majid Montazer and Tina Harifi“Nanofinishing of Textile Materials” Woodhead Publishing, ISBN: 978-0-08-101214-7, 2018.
Reference(s):	
1.	Asim Kumar Roy Choudhury “Principles of Textile Finishing” Woodhead Publishing, ISBN: 978-0-08-100646-7,2017.
2.	K.L.Mittal and Thomas Bhaners,“Textile Finishing: Recent development and Future Trends” ISBN 9781119426769,2017.
3.	Roshan Paul “Functional Finishes for Textiles” Woodhead Publishing, ISBN: 978-0-85709-839-9, 2015.
4.	Schindler W D and Hauser P J , "Chemical Finishing of Textiles", The Textile Institute, Wood head Publishing Ltd., Cambridge,2004.

*SDG 9 – Industry Innovation and Infrastructure

**SDG 3 – Good Health and Well Being

***SDG 6 – Clean Water and Sanitation

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of hours
1.0	**Chemical Finishing**	
1.1	Importance of chemical finishing	1
1.2	Methods of chemical finishing	2
1.3	softening finishes	1
1.4	Mechanisms of the softening effect	1
1.5	Types Softeners	1
1.6	Evaluation methods	1
1.7	Standards	1
1.8	Troubleshooting	1
2.0	**Hand Building Finishes**	
2.1	Hand building effect	1
2.2	Textiles with hand building finishes	1
2.3	Evaluation methods	1
2.4	Non-Slip Finishes	1
2.5	Mechanism	1
2.6	Application methods	1
2.7	Combinability	1
2.8	Evaluation and standards	1
2.9	Trouble shooting	1
3.0	**Ultraviolet Protection and Elastomeric Finishes**	
3.1	Mechanism of UV protection	2
3.2	EMI Shielding	2
3.3	Mechanism of elastomeric effect.	2
3.4	Evaluation	1
3.5	Standards	1
3.6	Trouble shooting	1
4.0	**Antimicrobial and Blood Repellent Finishes**	
4.1	Mechanism of antimicrobial finish	1
4.2	Mechanism of blood repellent finish.	1
4.3	Properties of an effective antimicrobial finish	1
4.4	Properties of an effective blood repellent finish	1
4.5	Chemicals/agents used and their interaction	2
4.6	Evaluation	1
4.7	Standards	1
4.8	Trouble shooting	1
5.0	**Novel Finishes**	
5.1	Anti-odour and fragrance finishes	1
5.2	Mosquito repellent finish	1
5.3	Conductive finish	1
5.4	Finishes using plasma and radiation technologies	2
5.5	Application of nano and biotechnology in finishing	2
5.6	Micro encapsulation technique and finishing	1
5.7	Smart textiles by chemical finishing	1

Course Designer(s)

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT E 23	Advances in Pattern Making	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To impart knowledge on human body measurements and creating pattern from the measurements.
- To develop commercial pattern with design aspect by manipulating the basic pattern.
- To fabricate patterns of different styles

Pre-requisites

- **Fashion Design and Pattern Making**

Course Outcomes

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

CO1	Gain knowledge on anthropometry	Understand
CO2	Acquire the skills for basic pattern making	Understand
CO3	Learn about various types of sleeves and colours	Understand
CO4	Gain knowledge on the types of yokes and pockets	Understand
CO5	Develop a the basics of pattern making of full garments	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	2	-	2
CO2	3	2	-	-	-	-	-	-	-	-	-	-	2	-	2
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	-	2
CO4	3	2	-	-	-	-	-	-	-	-	-	-	2	-	2
CO5	3	2	-	-	-	-	-	-	-	-	-	-	2	-	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. - Textile Technology								
60 TT E 23 - Advances in Pattern Making								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	3	0	0	45	3	40	60	100

Introduction to Pattern Making Anthropometry measurements, Human Anatomy, Clothing sizing systems, Body Ideals - Eight Head theory: Body proportions, Height and weight distribution. Pattern making tools, Types of paper pattern, Pattern making methods Pattern details. Measuring techniques - measuring the form- circumference, vertical and horizontal measurements.	[9]
Basic Pattern and Manipulation Drafting Bodice Blocks, Torso Blocks - Skirt Blocks. Fit- importance, standards, Evaluating fit-Bust, neckline, shoulder, armscye, collar, sleeve. Flat Pattern Techniques: Dart manipulation - slash and spread and pivotal transfer methods. Displacement of bust dart - waist line, side seam, arm hole, neck line, front edge. Creating Fullness using - tuck darts, pleats, flares, gathers, style lines.	[9]
Sleeve, Collar, Cuff Sleeve: Set-in-Sleeves (plain, puff, bell, bishop, circular), Raglan, Sleeves combined with bodice (Modified armholes, Kimono, Dolman). Cuff: shirt cuff, self-faced cuff, French cuff, contoured cuff. Collars: Classification, Factors to be considered while selecting Collars. Types - peter pan, partial roll, cape, scalloped, sailor, square, full roll convertible, shawl, Shakespeare.	[9]
Yoke, Pocket Yokes: Factors to be considered while selecting Yoke, preparing patterns for yokes - partial yoke, yoke without fullness, yoke with fullness, yoke supporting or releasing fullness. Pockets: Factors to be considered while selecting Pocket. Types - patch, bound, welt, side seam, front hip.	[9]
Pattern Making of Basic Garments for kids, Boys and Girls Design and Draft Kimono Block; Flat Trouser Block - Two Piece Trouser Block, One Piece Trouser Block - Basic T-shirts- Tee Dress- Jersey wear shirt- Sports shirt- Basic trousers- Dungaree Trousers- Easy Fitting trousers-Sports Shorts. Classic shirt and Trousers blocks- Basic Dress, Skirts and Tops	[9]
Total Hours:	**45**

Text Book(s):	
1.	Helen Joseph Armstrong, Pattern Making for Fashion Designers 5th Edition, Prentice-Hall, NewJersey, 2010.
2.	Fan J, Yu W, and Hunter L., Clothing Appearance and Fit: Science and Technology, Wood head Publishing Limited, 2004
Reference(s):	
1.	Ashdown S. P., Sizing in Clothing, Wood head Publishing Limited, 2007
2.	Winifred Aldrich, Pattern Cutting for Menswear, 4th edition, Blackwell Science Publisher, USA, 2006.
3.	Mary Mathew, Practical Clothing Construction, Part-II, Designing Drafting and Tailoring, Cosmic Press, Chennai, 1999
	Ashdown S. P., Sizing in Clothing, Wood head Publishing Limited, 2007

*SDG 9 – Industry Innovation and Infrastructure

Passed in BoS Meeting held on 21/11/2023
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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.	Topics	No. of hours
1.0	**Introduction to Pattern Making**	
1.1	Anthropometry measurements and human anatomy	1
1.2	Clothing sizing systems and body ideals	2
1.3	Eight Head theory: body proportions	1
1.4	Overview of pattern making tools and methods	2
1.5	Types of paper patterns and pattern details	2
1.6	Measuring techniques and practical application	1
2.0	**Basic Pattern and Manipulation**	
2.1	Drafting bodice, torso, and skirt blocks	2
2.2	Evaluating fit and importance of standards	2
2.3	Dart manipulation techniques	1
2.4	Displacement of bust dart	1
2.5	Creating fullness through various methods	2
2.6	Integration of style lines in design	1
3.0	**Body Components: Sleeve, Collar, Cuff**	
3.1	Types and modifications of sleeves	1
3.2	Cuff types and design techniques	1
3.3	Collar classification and selection factors	1
3.4	Detailed design of specific collar types	2
3.5	Practical collar drafting and fitting	2
3.6	Review of integration with overall garment design	2
4.0	**Body Components: Yoke, Pocket**	
4.1	Yoke selection factors and pattern preparation	2
4.2	Types of yokes and their design aspects	1
4.3	Pocket selection factors and types	1
4.4	Detailed design and drafting of pockets	2
4.5	Integrating pockets and yokes into garments	2
4.6	Practical application and troubleshooting	1
5.0	**Pattern Making of Basic Garments for kids, Boys and Girls**	
5.1	Design and Draft Kimono Block; Flat Trouser Block	2
5.2	Two Piece Trouser Block & One Piece Trouser Block	1
5.3	Basic T-shirts- T-Dress- Jersey wear shirt	2
5.4	Overview of software used in pattern grading	2
5.5	Sports shirt- Basic trousers- Dungaree Trousers - Easy Fitting trousers	1
5.6	Sports Shorts. Classic shirt and Trousers blocks- Basic Dress, Skirts and Tops	1

Course Designer(s)

1. Dr. Bharani Murugesan - bharanim@ksrct.ac.in
2. Dr. M.B. Sampath – Sampath.m.b@ksrct.ac.in

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT E 24	Export Policies and Documentation	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- Conveying insights into diverse facets of export trade, export finance, and the foreign exchange market.
- Providing understanding of product planning, development, product cycle, and market dynamics.
- Offering knowledge on EXIM policies, export documents, and export procedures.
- Evaluating government-led export promotion initiatives.
- Analysing pricing policies and terms prevalent in export trade.

Pre-requisites

- Total Quality Management

Course Outcomes

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

CO1	Differentiate domestic and international trade, merits and demerits & functions of Regional Trade Blocksand summarize the international business environment, regulatory framework and export barriers.	Remember
CO2	Analyse the different types of export credit facilities available for exporters and describe the export riskcoverage facilities	Understand
CO3	Summarize the concept of balance of payment and its functions and factors affecting counter trade andforeign exchange functions	Apply
CO4	Outline the export promotion activities undertaken by the government, summaries the foreign traderegulation act for regulating export trade	Analyse
CO5	Discuss the steps involved in export activity from raw material to shipping and the documents to be produced in bank for payment clearance and documents to be produced in central excise department claiming incentives.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	1	-	-	2	-	-	-	-	2	-	3	2	2
CO2	2	2	1	-	-	2	-	-	-	-	2	-	3	3	1
CO3	3	2	2	-	-	2	-	-	-	-	2	-	2	2	1
CO4	3	2	2	-	-	2	-	-	-	-	2	-	2	1	2
CO5	2	2	2	-	-	2	-	-	-	-	2	-	2	1	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 TT E 24 - Export Policies and Documentation								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	3	0	0	45	3	40	60	100

Introduction to International Business * Domestic trade Vs international trade - comparison; regional trade blocks – ASEAN, EU, SAARC, NAFTA; International business environment – social, cultural, political and regulatory; Tariff and Non-Tariff barriers – features.	[9]
International Trade Financing ** Export credit - L/C, export packing credit, post shipment credit, Buyers credit, Line of credit, short term, medium term, long term finance; Telegraphic Transfer, EXIM bank – objectives and functions; ECGC – objectives and functions; Forfaiting –functions and benefits; Product planning and development, product cycle, new product development ; Payment and PricingTerms in export trade.	[9]
Balance of Payment ** BOP – Introduction, components, functions, disequilibrium, financing BOP deficit; foreign exchange market – functions, dealings, exchange rate systems; Devaluation – introduction, limitations; Counter trade – meaning, factors responsible for growth of counter trade.	[9]
Exim Policies *** Foreign Trade Policy- objectives, EXIM policy related to textile; Export promotional measures – ASIDE, MAI, MDA, TEE,BPQ, TPS, DBK, EPCG, EOU, EHTP, STP, BTP, SEZ; Regulation and promotion of foreign trade – Introduction.	[9]
Export Documents ** Documents for export — primary and secondary, documents for claiming export assistance; international codes for products and services; export procedure – from packing to shipment.	[9]
Total Hours:	**45**

Text Book(s):	
1.	T.A.S Balagopal, " Export Management ", New age Publishers,2008
2.	Francis Cherunilam, "International Buisness Text and Cases", Prentice Hall India, 2009
Reference(s):	
1.	Philip Kortler and Kevin Lane Keller, "Marketing Management", PH , 2012.
2.	Ramaswamy V S and Namakumari S., "Marketing Management", Global Perspective Indian Context,Macmillian Publishers India Ltd ,2009
3.	Richard M.Hill, Ralph S.Alexander, James S.Cross, "Industrial Marketing", Aitbs Publishers & Distributors, 1998

***SDG 8: Decent Work and Economic Growth**

****SDG 9: Industry, Innovation, and Infrastructure**

*****SDG 12: Responsible Consumption and Production**

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of hours
1.0	**Introduction to International Business**	
1.1	Introduction of business	1
1.2	Concept of domestic trade and international trade	1
1.3	Regional trade blocks	1
1.4	ASEAN and EU	2
1.5	SAARC and NAFTA	1
1.6	International business environment	2
1.7	Features of Tariff and Non-Tariff barriers	1
2.0	**International Trade Financing**	
2.1	Introduction of International Trade Financing	1
2.2	Export credit and export packing credit	1
2.3	Post shipment credit, Buyers credit and Line of credit	1
2.4	Short term, medium term and long term finance	1
2.5	Telegraphic Transfer	1
2.6	Objectives and functions of ECGC	1
2.7	Product planning and development	1
2.8	Product cycle and new product development	1
2.9	Payment and PricingTerms in export trade	1
3.0	**Balance of Payment**	
3.1	Introduction to balance of payment	1
3.2	Components, functions and disequilibrium	1
3.3	Financing BOP deficit	1
3.4	Functions foreign exchange market	1
3.5	Dealings and exchange rate systems	1
3.6	Objects of devaluation	1
3.7	Counter trade	1
3.8	Factors responsible for growth of counter trade	2
4.0	**Exim Policies**	
4.1	Object of foreign Trade Policy	1
4.2	EXIM policy	1
4.3	Export promotional measures of ASIDE and MAI	1
4.4	MDA, TEE and BPQ	1
4.5	TPS, DBK, EPCG, BTP and SEZ	2
4.6	EOU, EHTP and STP	1
4.7	Foreign trade regulation and promotion	2
5.0	**Export Documents**	
5.1	Introduction to export documents	1
5.2	Primary and secondary	1
5.3	Documents for claiming export assistance	2
5.4	International codes for products and services	1
5.5	Export procedure	2
5.6	Packing	1
5.7	Shipment	1

Course Designer(s)

1 Mr.M.Arunkumar - arunkumar@ksrct.ac.in

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT E 25	Protective Textiles	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To provide an overview about the material selection, design and standard for protective textiles.
- To taught the various hazards and treatment methods to vanquish the hazards
- To educate the scope and functions of intelligent textiles in protective applications.
- To inculcated the construction of various protective garments.
- To enlighten the requirement for defense application and to evaluate the protective garment

Pre-requisites

Fabric Manufacturing Technology

Course Outcomes

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

CO1	Exceeded safety standards, establishing new industry benchmarks through critical analysis.	Understand
CO2	Pioneered user-centric protective textiles using innovative, problem-solving approaches.	Understand
CO3	Engineered hazard-specific textiles through comprehensive threat analysis.	Analyse
CO4	Customized textiles for diverse sectors, demonstrating adaptive, needs-focused thinking.	Apply
CO5	Enhanced textile performance continuously, utilizing reflective assessment strategies	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	2	2	2	-	-	-	-	-	-	-	2	3	2
CO2	2	2	3	2	3	-	-	-	-	3	-	-	3	2	-
CO3	3	3	3	3	2	-	2	-	-		-	-	3	3	-
CO4	2	2	2	2	2	2	2	-	3	3	-	-	2	3	2
CO5	2	2	2	3	3	-	-	-	-	3	-	-	2	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT E 25 – Protective Textiles								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
V	3	0	0	45	3	40	60	100

Materials, Standards and Design for Protective Textiles* Introduction, Definition, Classification, Materials and technologies, Fibres and Fabrics for protective textiles. Steps in the selection of protective clothing materials. Requirements, International standards, Certification. Design - Factors influencing the design development process, Clothing systems and functionality, Harmonize fashion and function.	[9]
Hazards &Surface treatments for protective textiles* Introduction, Types of hazards, Mechanical hazards - Ballistic and knife protection, Blunt impact protection. Chemical and biological hazards. Electrical and radiation hazards Environmental and fire hazards, Surface treatment – Types, pre treatments for protective textiles, Different finishes for protective textiles, Fundamental & Modern treatment process.	[9]
Intelligent textiles and Protection against UV, Thermal, Ballistic & other hazards** Smart textiles, Application of smart textiles for protective purposes, Sensor function, Data processing, Actuators, Energy, Communication, Electric actuation. Textiles for UV protection, Textiles for protection against cold, Thermal (heat and fire) protection, Ballistic protection, Microorganism protection, Textiles for respiratory protection, Electrostatic protection.	[9]
Protection against Civilian, Chemical and biological protection & defense*** Classification of chemical protective clothing, Garment types, materials, design features and sizing, Garment material chemical resistance testing, Chemical protective clothing integrity performance & properties. Protective clothing for Firefighters and Protection for workers in the oil and gas industries Introduction, General requirements for military protective textiles, Camouflage, concealment and deception, NBC protection.	[9]
Evaluation of Protective Textiles**** Standards and test method for protective fabric performance – flame retardant finishes, liquid repellent finishes, antistatic, liquid repellent, antibacterial, UV protection, mite protection; manikins-thermal manikins, segmented thermal manikins; evaporative resistance measurement-moisture permeability index, skin model; concept of dynamic manikins; permeation resistance test-index of penetration and index of repellency; liquid tight integrity and gas tight integrity.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Shahid ul-Islam, Abhijit Majumdar, Bhupendra Butola, “In The Textile Institute Book Series, Advances in Healthcare and Protective Textiles”, Woodhead Publishing, 2023.
2.	F. Wang and C. Gao., “Protective Clothing Managing Thermal Stress” Woodhead Publishing Series in Textiles,2014.
Reference(s):	
1.	ASTM Standards on Protective Clothing Textbook Solutions
2.	Shahid Ul Islam, Bhupendra Singh Butola, “Advances in Functional and Protective Textiles”, 1st Edition - June 11, The Textile Institute Publisher, 2020,
3.	Krister Forsberg, Ann Van den Borre, Norman Henry, III, James P. Zeigler, “Quick Selection Guide to Chemical Protective Clothing”, 6th Edition, Wiley, June 2014.
4.	T.Matsuo, “Fiber materials for Advanced Technical Textiles”, CRC publication, 2008.

* SDG 3 – Good Health and Well Being
** SDG 9 – Industry Innovation and Infrastructure
***SDG:15 - Life on Land
****SDG: 04 Quality Education

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of hours
1.0	**Introduction to Protective Textiles & Design and Functionality of Protective Textiles**	
1.1	Overview, Definition, and Classification	1
1.2	Materials and Technologies in Protective Textiles	1
1.3	Fibers and Fabrics for Protective Textiles	1
1.4	Steps in the Selection of Protective Clothing Materials	1
1.5	Requirements and International Standards for Protective Textiles	1
1.6	Certification Processes for Protective Textiles	1
1.7	Factors Influencing Design Development	1
1.8	Clothing Systems and Functionality	1
1.9	Harmonizing Fashion and Function in Protective Textiles Design Considerations for Different Protective Needs	1
2.0	**Hazards and Surface Treatments**	
2.1	Introduction to Types of Hazards	2
2.2	Mechanical Hazards: Ballistic and Knife Protection	1
2.3	Blunt Impact Protection	1
2.4	Chemical and Biological Hazards	1
2.5	Electrical and Radiation Hazards	1
2.6	Environmental and Fire Hazards	1
2.7	Surface Treatments: Types and Applications	1
2.8	Pre-treatments and Finishing Processes for Protective Textiles	1
3.0	**Intelligent Textiles and Specific Hazard Protection**	
3.1	Introduction to Smart Textiles	1
3.2	Applications of Smart Textiles in Protection	1
3.3	Textiles for UV Protection	1
3.4	Textiles for Thermal (Heat and Fire) Protection	2
3.5	Textiles for Ballistic Protection	1
3.6	Protection against Cold: Materials and Designs	2
3.7	Microorganism Protection and Respiratory Protective Textiles	1
4.0	**Protective Textiles in Specific Sectors**	
4.1	Chemical Protective Clothing: Classification and Design	1
4.2	Garment Material Chemical Resistance Testing	1
4.3	Protective Clothing for Firefighters	1
4.4	Protection for Workers in the Oil and Gas Industries	2
4.5	Military Protective Textiles: Requirements and Camouflage	2
4.6	NBC (Nuclear, Biological, Chemical) Protection	2
5.0	**Evaluation of Protective Textiles**	
5.1	Standards and Test Methods for Protective Fabric Performance	1
5.2	Evaluation Techniques: Manikins, Skin Models, Permeation Tests	2
5.3	Liquid Tight Integrity and Gas Tight Integrity Tests	2
5.4	Evaluating Flame Retardant and Liquid Repellent Finishes	2
5.5	Testing for Antistatic, Antibacterial, and UV Protection Properties	2

Course Designer(s)

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT E 26	Apparel Production Machinery and Equipment	Category	L	T	P	Credit
		PE	2	0	2	3

Objectives

- To impart the various aspects of spreading and cutting machines and functions of the sewing machines.
- To Select work aid attachments and expertise in computer controlled sewing machine.
- To acquire knowledge on the design and operational features of garment production machinery and equipment.
- To understand the various garment folding, computer controlled sewing machines.
- To know the details of garment machinery and equipment with focus on the means of exploiting the features built in the garment machinery and equipment.

Pre-requisites

- Garment Manufacturing Technology

Course Outcomes

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

CO1	State the types and functions of spreading and cutting machine.	Remember
CO2	Explain the various parts and functions of sewing machine.	Understand
CO3	Describe the classification of sewing machine according to bed types, belt drives and the functions of over lock and flat lock.	Understand
CO4	Explain the various work aids and attachments of sewing machines and safety care.	Understand
CO5	Demonstrate the various special purpose machines and its care and maintenance.	Remember

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	2	-	-	-	-	-	-	-	-	-	3	3	-
CO2	2	2	2	-	-	-	-	-	-	-	-	-	3	3	-
CO3	3	3	3	-	-	-	-	-	-	-	-	-	3	3	-
CO4	2	2	3	-	-	-	-	-	-	-	-	-	3	3	-
CO5	2	2	2	-	-	-	-	-	-	-	-	-	3	3	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)				Model Examination (Marks)	End Sem Examination (Marks)	
	Test 1		Test 2				
	Theory	Lab	Theory	Lab	Lab	Theory	Lab
Remember	20	50	20	50	50	50	50
Understand	40	50	40	50	50	50	50
Apply	-	-	-	-	-	-	-
Analyse	-	-	-	-	-	-	-
Evaluate	-	-	-	-	-	-	-
Create	-	-	-	-	-	-	-
Total	60	100	60	100	100	100	100

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 TT E 26 Apparel Production Machinery and Equipment

Semester	Hours / Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
V	2	0	2	60	3	50	50	100

Spreading and Cutting machines Types and functions of fabric spreading machines; types and functions of cutting machines – straight knife, round knife, band knife, die cutting, computerized cutting,	[6]
Parts and Functions of Sewing machines Parts and functions of sewing machines: needles, bobbin, bobbin cases, shuttle, shuttle hook, loops, loop spreader, threading fingers, throat fingers, throat plate, take up lever; tension discs etc..	[6]
Sewing machine mechanism Sewing machineries: classification according to bed types; classification based on stitch types (hook and looper); driving mechanism of SNLS and double needle lockstitch machine; types of belt drives; threading diagram for over lock and flat lock machines.	[6]
Work Aids and Special attachments Work aids attachments: roller guides, edge guides, hemmers, folders, compensating pressure foots left, right, feller, hammer, elastic attachment etc. sewing machines safety regulations; care and maintenance of sewing machines.	[6]
Special Purpose machines Special machines: collar and cuff turning machines, bar tacking machine, button hole machine. button stitch machine, blind stitch machine; feed of the arm machine; metal detector machine; care and maintenance.	[6]
Practical: 1. Demonstrate the operation of straight knife cutting machine. 2. Demonstrate the operation of band knife cutting machine. 3. Identify common defects in cutting and propose remedies for each. 4. Demonstrate the driving mechanism of single needle lockstitch (SNLS) machine. 5. Perform threading diagram for overlock machine and troubleshoot common problems. 6. Perform threading diagram for flatlock machine and troubleshoot common problems. 7. Demonstrate the operation of special purpose machine - collar machine. 8. Demonstrate the operation of special purpose machine - buttonhole machine. 9. Demonstrate the operation of special purpose machine – blind stitch machine. 10. Mini project.	[30]
Total Hours: (Lecture - 30; Practical - 30)	**60**

Text Book(s):

1.	Rathinamoorthy R, “Apparel Machinery and Equipment” Hardcover – wood head publishing, 2018.
2.	T. Karthik ,P. Ganesan ,D. Gopalakrishnan “Apparel Manufacturing Technology” Paperback – Taylor & Francis Ltd,2020.

Reference(s):

1.	Fazliddin Kurbanov “Improvement of the sewing machine needle mechanism “LAP Lambert Academic Publishing, 2020.
2.	Catherine Fairhurst “Advances in Apparel Production” Wood head Publishing Series in Textiles, 1st Edition, Kindle Edition-2008.
3.	Ruth E.Glock, Grace I.Kunz, “Apparel Manufacturing Sewn Product Analysis”, Blackwell Scientific Publications. (2004).
4.	Claire Shaeffer, “Sewing for Apparel Industry”, 1st edition, Pearson’s Prentice Hall, New Jersey, USA, 2000.

* SDG 4 Quality Education
** SDG 9 Industry, Innovation, and Infrastructure
*** SDG12 Responsible Consumption and Production

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of Hours
1	**Spreading and Cutting machines**	
1.1	Types and functions of fabric spreading machines	1
1.2	Types and functions of cutting machines	1
1.3	Straight knife and round knife cutting machine	1
1.4	Band knife cutting machine	1
1.5	Types of Cutting	1
1.6	Computerized cutting	1
2	**Parts and Functions of Sewing machines**	
2.1	Parts of sewing machines	1
2.2	Functions of sewing machines	1
2.3	Needles, bobbin and bobbin cases	1
2.4	shuttle, shuttle hook, loops and loop spreader	1
2.5	Threading fingers, throat fingers and throat plate	1
2.6	Tension discs and take up lever	1
3	**Sewing machine mechanism**	
3.1	Sewing machineries	1
3.2	Classification according to bed types	1
3.3	Classification based on stitch types	1
3.4	Driving mechanism of SNLS and double needle lockstitch machine	1
3.5	Types of belt drives	1
3.6	Threading diagram for overlock and flatlock flat lock machines	1
4	**Work Aids and Special attachments**	
4.1	Work aids attachments: roller guides	1
4.2	Edge guides, hemmers and folders	1
4.3	Compensating pressure foots left and right	1
4.4	Feller, hammer and elastic attachment	1
4.5	Sewing machines safety regulations	1
4.6	Care and maintenance of sewing machines	1
5	**Special Purpose machines**	
5.1	Special machines	1
5.2	Collar and cuff turning machines	1
5.3	Bar tacking machine and button hole machine	1
5.4	Button stitch machine and blind stitch machine	1
5.5	Feed of the arm machine and Metal detector machine	1
5.6	Care and maintenance	1
Practical:		
1.	Demonstrate the operation of straight knife cutting machine.	2
2.	Demonstrate the operation of band knife cutting machine.	2
3.	Identify common defects in cutting and propose remedies for each.	2
4.	Demonstrate the driving mechanism of single needle lockstitch (SNLS) machine.	2
5.	Perform threading diagram for overlock machine and troubleshoot common problems.	2
6.	Perform threading diagram for flatlock machine and troubleshoot common problems.	2
7.	Demonstrate the operation of special purpose machine – collar machine.	2
8.	Demonstrate the operation of special purpose machine - buttonhole machine.	4
9.	Demonstrate the operation of special purpose machine – blind stitch machine.	4
10.	Mini project.	8

Course Designer(s)

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT E 27	Colour Communication	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- The student will be able to understanding colour psychology for various environments.
- The student will be able to gain knowledge on the impact of colour for different moods.
- The student will be able to gain knowledge on various theories of colour.

Pre-requisites

- **Textile Chemical Processing**

Course Outcomes

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

CO1	Learn the basics of colour perceptions	Analyse
CO2	Understand colour applications in different forms	Analyse
CO3	Apply subtractive colour schemes	Apply
CO4	Learn about colour and its applications in story content	Apply
CO5	Gain knowledge on colour vision	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	-	-	-	-	2	2	-	-	-	-	2
CO2	3	-	-	-	-	-	-	-			-	-	-	-	2
CO3	3	-	-	-	-	-	-	-	2	2	-	-	-	-	2
CO4	3	-	-	-	-	-	-	-			-	-	-	-	2
CO5	3	-	-	-	-	-	-	-	2	2	-	2	-	-	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. - Textile Technology

60 TT E 27 - Colour Communication

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
V	3	0	0	45	3	40	60	100

COLOUR PSYCHOLOGY AND PSYCHOLOGICAL PERCEPTION OF INDIVIDUAL COLOURS: Definition - Introduction from the psychological view - characteristics and effects of major hues - Etymology - Stylistic and cultural origins. Colour sense - definition, inside view of ability to perceive variations in colour - Luminosity and saturation. Colour aids impression - External causes of colour in sensation - reflections, transmission, and selective absorption - Colour perceptions - Colour blindness - Colour impression - Mood and emotions - Colour and appetite -Colour and flavour - Symbolisms of warm and cool colours, Transmittance measurement- solutioncolorimetry	[9]
SOCIO-ECONOMIC ASPECTS OF COLOUR AND COLOUR IN NATURE AND ART: Economic status, towards imagination, Colour function and cognitions - Bathroom, Bed room, Kitchen, Drawing and Dining rooms, Store room, Work room, Office premises.The hues of plants, animals and insects - Colours of inorganic substances - Colour expresses moods of nature - Use of colour in painting - three typical methods in oil painting - Experiments with effects of oil paints – The representation of sun lights.	[9]
COLOUR AND PSYCHOANALYSIS: Preference and stimulus/effect, Gestalt psychology, object and ground, relating to colour: age related preference, gender preference, and cultural preference. Apply techniques to subtractive and additive color schemes-Compare and contrast subtractive and additive color schemes-Discuss the history and theory of color-Generate additive color schemes-Generate subtractive color schemes -Describe various color palettes-Pre-organize color design for film-Develop color storyboard keys -Develop color script.	[9]
PSYCHOLOGICAL IMPACT OF COLOR: Describe the psychological impact of color-Explain color and its emotional impact in film composition and narrative-Demonstrate editing of color from cut to cut or shot to shot for emotional impact -Discuss cultural variations in the psychology of color. Relate color theory to production and post production processes-Demonstrate color calibration as relates to output- Discuss color theory as it relates to art direction and production design-Exhibit color rhythm, timing, spacing, temperature, atmosphere, composition, balance, and speed to impact film- Generate examples of color design to build story content.	[9]
THEORIES OF COLOUR : Theories of Color Vision- Comparative Color Vision and Evolution- Dispositions, Dispositional Theories of Color-Dispositional Theories Continued-Color Eliminativism-Primary Quality Theories of Color-Functionalist Primary Quality Theories of Color- Experience, Color Experience, and Identity Theories-Intentionalist Accounts of Color Experience-Spectrum Inversions-The Knowledge Argument and the Explanatory Gap	[9]
Total Hours:	**45**

Text Book(s):

1.	M L Gulrajani. Colour measurement: Principles, advances and industrial applications, Nov 2010
2.	Hylda Rhodes and Henri M. Leon, The Psychology and Tradition of Colour, Kessinger Publishing,LLC, 2005.

Reference(s):

1.	Leatrice Eiseman, Colour: Messages & Meanings: A Pantone Colour Resource, Hand Books PressUSA, 2006.
2.	Frank H. Mahnke, Colour, Environment, & Human Response, Wiley, Singapore, 1996.
3.	Steven Bleicher, Contemporary Colour Theory and Use, Steven Bleicher Publishing, 2004.
	Dorothee Mella, Language of Colour, Grand Central Publishing, New York, 1988.

*SDG 9 – Industry Innovation and Infrastructure

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of hours
1.0	**Colour Psychology and Psychological Perception of Individual Colours**	
1.1	Introduction to colour psychology	2
1.2	Effects of major hues and colour etymology	2
1.3	Colour sense and perception of variations	2
1.4	External causes of colour in sensation	2
1.5	Colour perceptions, blindness, and impressions	2
1.6	Colour impact on mood, appetite, and symbolism	1
2.0	**Socio-economic Aspects of Colour and Colour in Nature and Art**	
2.1	Colour in different socio-economic contexts	2
2.2	Colour function in various room types	2
2.3	Colours of flora, fauna, and inorganic substances	1
2.4	Colour in art and painting techniques	2
2.5	Effects of oil paints and sunlight representation	2
2.6	Application and analysis of colour in artistic settings	2
3.0	**Colour and Psychoanalysis**	
3.1	Colour preferences and effects across different demographics	1
3.2	Psychoanalytic theories relating to colour	2
3.3	Subtractive and additive colour schemes	2
3.4	Historical and theoretical backgrounds of colour	2
3.5	Colour design for media and pre-organizing film color schemes	2
3.6	Development of colour storyboard keys and scripts	2
4.0	**Psychological Impact of Color**	
4.1	Psychological impacts of colour in various settings	2
4.2	Emotional impacts of colour in film and narrative	2
4.3	Colour editing for emotional impact in visual media	2
4.4	Cultural variations in colour psychology	2
4.5	Colour theory in production and post-production	1
4.6	Techniques in colour design to enhance story content	2
5.0	**Theories of Colour**	
5.1	Theories of colour vision and comparative studies	2
5.2	Dispositional and eliminativist theories of colour	2
5.3	Functionalism and primary quality theories of colour	2
5.4	Experience and identity theories related to colour	2
5.5	Intentionalist accounts of colour experience and spectrum inversions	1
5.6	The knowledge argument and explanatory gaps in colour theory	2

Course Designer(s)

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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 2023-2024)

SEMESTER VI

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	60 HS 003	Total Quality Management	HS	3	3	0	0	3
2.	60 TT 601	Textile and Apparel Quality Evaluation	PC	3	3	0	0	3
3.	60 TT 602	Garment Manufacturing Technology I	PC	3	3	0	0	3
4.	60 TT 603	Technical Textiles II	PC	4	2	0	2	3
5.	60 TT E3*	Professional Elective III	PE	3	3	0	0	3
6.	60 OE L0*	Open Elective III	OE	3	3	0	0	3
PRACTICALS								
7.	60 TT 6P1	Garment Construction Laboratory I	PC	3	0	0	3	1.5
8.	60 TT 6P2	Textile and Apparel Quality Evaluation Laboratory	PC	3	0	0	3	1.5
9.	60 TT 6P3	Design Thinking and product Development Laboratory	PC	2	0	0	2	1
10.	60 CG 0P5	Comprehension Test	CG	2	0	0	2	1*
11.	60 CG 0P6	Internship	CG	-	-	-	-	1/2/3*
				29	**17**	**0**	**12**	**22**

Internship* additional credits is offered based on the duration

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BoS Chairman
Head of the Department
Department of Textile Technology
K S Rangasamy College of Technology
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K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215
(An Autonomous Institution affiliated to Anna University)

B.E. / B.Tech. Degree Programme

SCHEME OF EXAMINATIONS
(For the candidates admitted in 2023-2024)

SIXTH SEMESTER

S. No.	Course Code	Name of the Course	Duration of Internal Exam	Weightage of Marks			Minimum Marks for Pass in End Semester Exam	
				Continuous Assessment *	End Semester Exam **	Max. Marks	End Semester Exam	Total
THEORY								
1.	60 HS 003	Total Quality Management	2	40	60	100	45	100
2.	60 TT 601	Textile and Apparel Quality Evaluation	2	40	60	100	45	100
3.	60 TT 602	Garment Manufacturing Technology I	2	40	60	100	45	100
4.	60 TT 603	Technical Textiles II	2	50	50	100	45	100
5.	60 TT E3*	Professional Elective III	2	40	60	100	45	100
6.	60 OE L0*	Open Elective III	2	40	60	100	45	100
PRACTICAL								
7.	60 TT 6P1	Garment Construction Laboratory I	3	60	40	100	45	100
8.	60 TT 6P2	Textile and Apparel Quality Evaluation Laboratory	3	60	40	100	45	100
9.	60 TT 6P3	Design Thinking and product Development Laboratory	2	60	40	100	45	100
10.	60 CG 0P5	Comprehension Test	3	100	-	100	-	100
11.	60 CG 0P6	Internship	3	100	-	100	-	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, 50 marks for theory cum practical End Semester Examination and 40 marks for practical End semester Examination.

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60 HS 003	Total Quality Management	Category	L	T	P	Credit
		HS	3	0	0	3

Objectives

- To facilitate the understanding of total quality management principles, tools and techniques
- To equip the students to apply the TQM principles, tools and techniques in manufacturing sectors
- To equip the students to apply the TQM principles, tools and techniques in service sectors
- To impart knowledge on quality management principles, tools, techniques and quality standards for real life applications
- To make the students understand the importance of standards in the quality assurance process and their impact on the final product

Pre-requisites

- NIL

Course Outcomes

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

CO1	Recognize the need for quality concepts and its application in organizations.	Remember
CO2	Apply the TQM principles for survival and growth in world class competition.	Understand
CO3	Apply the traditional tools and new tools for quality improvement.	Understand
CO4	Apply the tools and techniques like quality circle, QFD, TPM and FMEA for qualityimprovement.	Apply
CO5	Apply QMS and EMS in organizations.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO3	3	3	-	-	-	-	-	-	-	-	-	-	3	3	-
CO4	3	3	-	-	-	-	-	-	-	-	-	-	3	3	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-	2	3	-
3 - Strong; 2 - Medium-; 1 - Some															

Assessment Pattern

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

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TIRUCHENGODE-637 215

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
Common to Mech, MCT, Textile								
60 HS 003 - Total Quality Management								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VI	3	0	0	45	3	40	60	100

Introduction to Fundamentals of Total Quality Management Introduction, definitions of quality, need for quality, evolution of quality, dimensions of quality, product quality and service quality; Basic concepts of TQM, TQM framework, contributions of Deming, Juran and Crosby. Barriers to TQM; Quality statements, customer focus, customer satisfaction, customer complaints, customer retention; costs to quality.	[9]
Total Quality Management Principles TQM principles; leadership, strategic quality planning; Quality councils- employee involvement, motivation; Empowerment; Team and Teamwork; Quality circles, recognition and reward, performance appraisal; continuous process improvement; PDSA cycle, Kaizen, 5S & 7S ; Supplier partnership, Partnering, Supplier rating and selection.	[9]
TQM Management Tools and Techniques The seven traditional tools of quality; New management tools - applications to manufacturing, service sector, Statistical Fundamentals, Measures of central Tendency and Dispersion, Population and Sample, Normal Curve, control charts, process capability, concepts of six sigma, Bench marking - Reasons to benchmark, Benchmarking process.	[9]
TQM Process based Tools and Techniques Quality circles, Quality Function Development (QFD), Taguchi quality loss function; TPM-concepts, improvement needs, performance, measures. FMEA- stages, types-Design FMEA and Process FMEA.	[9]
Quality Management System Introduction-Benefits of ISO Registration-ISO 9000 Series of Standards-Sector-Specific Standards - AS 9100, TS16949 and TL 9000 - ISO 9001, ISO 9001:2008 Requirements-Implementation-Documentation-Internal Audits-Registration-Environmental Management System: Introduction—ISO 14000 Series Standards—Concepts of ISO 14001—Requirements of ISO 14001-Benefits of EMS.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Dale H.Besterfiled, et al., “Total Quality Management”, Pearson Education, Inc.2003. (Indian reprint 2020). ISBN 81- 297-0260-6.
2.	Janakiraman, B and Gopal, R.K, “Total Quality Management – Text and Cases”, Prentice Hall (India) Pvt. Ltd. 2016.
Reference(s):	
1.	James R. Evans, James Robert Evans, William M. Lindsay , “The Management and Control of Quality”, South-Western, 2019.
2.	Joel.E. Ross, “Total Quality Management – Text and Cases”, 3rd Edition, Routledge, 2021.
3.	International 1996. 5. Zeiri. “Total Quality Management for Engineers”, Wood Head Publishers, 2019.
4.	Narayana V. and Sreenivasan, N.S. “Quality Management – Concepts and Tasks”,New Age, 2018.

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1	**Introduction to Fundamentals of Total Quality Management**	
1.1	Introduction and Definition of Quality	1
1.2	Need and evolution of quality	1
1.3	Different Dimensions of Quality	1
1.4	Basic concepts of TQM and TQM framework	1
1.5	Deming, Juran and Crosby Philosophy of quality Management	1
1.6	Barriers to TQM Implementation	1
1.7	Quality Statements, Strategic Planning	1
1.8	Customer focus, customer satisfaction customer retention Techniques	1
1.9	Techniques for Quality Costs	1
2	**Total Quality Management Principles**	
2.1	Total Quality Management Principles	1
2.2	Strategic of quality planning and Quality councils	1
2.3	Motivation, Empowerment, Teams, Recognition and Reward	1
2.4	Performance Appraisal, Benefits, Continuous Process Improvement	1
2.5	Juran Trilogy, PDSA Cycle Continuous Process Improvement	1
2.6	5S, Kaizen, Continuous Process and Supplier Partnership	1
2.7	Partnering, sourcing, Supplier Selection	1
2.8	Supplier Rating, Relationship Development,	1
2.9	Basic Concepts, Strategy, Performance Measure.	1
3	**TQM Management Tools and Techniques**	
3.1	The seven traditional management tools of quality	1
3.2	The New management tools	1
3.3	Management tools applications to manufacturing	1
3.4	Management tools applications to service sector	1
3.5	Statistical Fundamentals in management tools	1
3.6	Normal Curve, Control Charts for variables and attributes	1
3.7	Concepts of six sigma principles	1
3.8	Benchmarking tools and Reasons to benchmark	1
3.9	Benchmarking process tools	1
4	**TQM Process based Tools and Techniques**	
4.1	Quality circles	1
4.2	Quality Function Deployment (QFD	1
4.3	house of Quality, QFD Process	2
4.4	Benefits, Taguchi Quality Loss Function	1
4.5	Total Productive Maintenance (TPM	1
4.6	Concept, Improvement Needs	1
4.7	Performance measuring tools	1
4.8	stages, types of FMEA	1
4.9	Process implementation of FMEA	1
5	**Quality Management System**	
5.1	Introduction-Benefits of ISO Registration	1
5.2	ISO 9000 Series of Standards- Sector-Specific Standards	1
5.3	AS 9100, TS16949 and TL 9000 - ISO 9001, ISO 9001:2008 requirements	1
5.4	Implementation-Documentation-Internal Audits	1
5.5	Registration-Environmental Management System	1
5.6	Introduction—ISO 14000 Series Standards	1
5.7	Concepts of ISO 14001	1
5.8	Requirements of ISO 14001-Benefits of EMS	1

Course Designer(s)

1. Dr.G.Mylsami - mylsamig@ksrct.ac.in

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60 TT 601	Textile and Apparel Quality Evaluation	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- To study the importance of quality evaluation.
- To know in detail the various aspects of testing fibre properties.
- To know in detail the various aspects of testing yarn properties.
- To know in detail the various aspects of testing fabric properties.
- To know in detail the various aspects of assessing garment properties.

Pre-requisites

Nil

Course Outcomes

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

CO1	Analyse and differentiate between various textile quality types and their influencing factors.	Analyse
CO2	Assess fiber and yarn properties using specialized instruments, understanding their roles in quality control.	Analyse
CO3	Design protocols for comprehensive fabric and apparel quality assessments.	Apply
CO4	Conduct quality evaluations for specialty fabrics, using industry-specific standards.	Apply
CO5	Interpret textile test results, relating them to performance standards and end-use implications.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	-	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO3	2	2	-	-	-	-	-	-	-	-	-	-	2	3	-
CO4	2	2	-	-	-	-	-	-	-	-	-	-	3	3	-
CO5	3	3	-	-	-	-	-	-	-	-	-	-	2	2	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
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TIRUCHENGODE-637 215

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. - Textile Technology

60 TT 601 - Textile and Apparel Quality Evaluation

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VI	3	0	0	45	3	40	60	100

Quality Evaluation in Textiles* Definition of quality; types of quality – quality of design, quality of conformance, quality of performance, quality control and quality assurance; factors influencing quality; reasons for textile quality evaluation; types of sampling - random and biased sampling, fibre sampling from bulk, combed slivers and rovings; yarn sampling; fabric sampling; standard testing atmosphere; testing methods. Standards: ASTM, AATCC, ISO, BIS etc	[9]
Fibre Quality Evaluation* Determination of fibre length and its uniformity- Baer sorter, digital fibrograph; determination of fibre fineness determination of fibre strength and elongation - stelometer; high speed fibre measurement- High Volume Instrument, Advanced Fibre Information System; evaluation of man-made fibre properties - single fibre fineness - vibroscope method; determination of trash and fibre maturity; determination of moisture content and regain in fibres.	[9]
Yarn Quality Evaluation* Linear density – Direct & Indirect systems and its determination; evaluation of twist in single and ply yarns; crimp; determination of evenness- capacitance method, spectrogram, variance-length curve; yarn hairiness, principles of tensile testing, tensile testing of yarn at higher speeds, factors influencing tensile characteristics; classification of yarn faults - Classimat; yarn appearance assessment – ASTM yarn grades. Physical testing of sewing threads, sewing defects – assessment and Control	[9]
Fabric and Apparel Quality Evaluation* Determination of tensile and tear strength; bursting strength; dimensional stability; air permeability; water vapour permeability; water repellency; thermal conductivity; abrasion resistance; snagging; pilling; crease recovery; drape; stiffness; fabric weight, thickness; colour fastness Flammability. Fabric checking procedure - 4 point system, 10 point system; fabric inspection machine	[9]
Comfort, Durability, and Safety Evaluations * Comfort- subjective and objective evaluation of fabric handle - KES, FAST, FTT; Seam slippage and strength testing; button pull strength test, button impact test, zipper strength test. Testing for harmful substances in textile and apparel.	[9]
Total Hours:	**45**

Text Book(s):

1.	Principles of Textile Testing by J. E. Booth, 1996, Heywood Books, London. Kindle Version: 2018
2.	Ahmad, S., Rasheed, A., Afzal, A., & Ahmad, F. (Eds.) "Advanced Textile Testing Techniques", 1st Edition, CRC Press. 2017. https://doi.org/10.4324/9781315155623

Reference(s):

1.	Physical Testing of Textiles by B. P. Saville, 1999, Woodhead Publishing Ltd., U. K. .
2.	Testing and Quality Management – Edited by V. K. Kothari, IAFL Publications, New Delhi
3.	Handbook of Textile Testing and Quality Control by E. B. Grover and D. S. Hamby.
4.	V.Sundaram, "Handbook of Textile Testing", CTRL Publications, Bombay, 2004.

* SDG: 04: Quality Education

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Quality Evaluation in Textiles**	
1.1	Overview of Textile Quality	1
1.2	Definition of Quality in Textiles	1
1.3	Types of Quality: Design, Conformance, Performance	1
1.4	Quality Control and Assurance & Factors Influencing Quality	1
1.5	Reasons for Textile Quality Evaluation & Overview of Sampling Techniques	2
1.6	Random and Biased Sampling & Fibre Sampling from Bulk	1
1.7	Sampling in Combed Slivers and Rovings & Yarn Sampling Techniques	1
1.8	Fabric Sampling Methods	1
1.9	Standard Testing Atmosphere & Impact of Atmosphere on Testing	1
2.0	**Fibre Quality Evaluation**	
2.1	Overview of Fibre Quality Evaluation	1
2.2	Fibre Length and Uniformity	1
2.3	Fibre Fineness Determination	1
2.4	Fibre Strength and Elongation	1
2.5	High-Speed Fibre Measurement	1
2.6	Man-Made Fibre Properties	2
2.7	Trash Content and Fibre Maturity	1
2.8	Moisture Content and Regain in Fibres	1
3.0	**Yarn Quality Evaluation**	
3.1	Overview of Yarn Quality Evaluation	1
3.2	Linear Density	1
3.3	Evaluation of Twist in Yarns	1
3.4	Yarn Evenness	1
3.5	Yarn Hairiness Assessment	1
3.6	Principles of Tensile Testing	1
3.7	High-Speed Tensile Testing	1
3.8	Yarn Fault Classification	1
3.9	ASTM Yarn Grades and Appearance Assessment	
4.0	**Fabric and Apparel Quality Evaluation**	
4.1	Overview of Fabric Testing	1
4.2	Tensile and Tear Strength Testing	1
4.3	Bursting Strength Assessment	1
4.4	Dimensional Stability Tests	1
4.5	Air and Water Vapour Permeability	1
4.6	Water Repellency and Thermal Conductivity	1
4.7	Abrasion, Snagging, and Pilling Tests	1
4.8	Crease Recovery, Drape, Stiffness	1
4.9	Color Fastness and Flammability	1
4.10	Fabric Checking: 4 Point and 10 Point Systems	1
5.0	**Comfort, Durability, and Safety Evaluations**	
5.1	Comfort Evaluation	1
5.2	Objective and Subjective Evaluation of Fabric Handle	1
5.3	Seam Slippage and Strength Testing	2
5.4	Button Pull Strength and Impact Tests	2
5.5	Zipper Strength Testing	1
5.6	Testing for Harmful Substances in Textiles	1

Course Designer(s)

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

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60 TT 602	Garment Manufacturing Technology I	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- To impart knowledge on fabric spreading and cutting
- To impart knowledge on stitches, seams and sewing machine
- To impart knowledge on human anatomy and body measurements
- To impart knowledge on basic pattern making
- To impart knowledge on pattern grading and marker planning

Pre-requisites

Basic knowledge about woven and knitted fabrics

Course Outcomes

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

CO1	Understand the fabric spreading process and various types of cutting machines	Understand
CO2	Sketch various head theories and difference between normal figure and fashion figure	Apply
CO3	Classify the different stitches, seams, sewing threads and Basics of SNLS	Remember
CO4	Demonstrate the skills acquired on basic patterns for mens, womens and childrens	Apply
CO5	Demonstrate the skills acquired on grading patterns for different garments and marker planning and marker making	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO3	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-	2	2	2
CO5	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	20	20	34
Understand	40	40	26
Apply	20	20	40
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

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K S Rangasamy College of Technology
TIRUCHENGODE-637 215

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 TT 602 - Garment Manufacturing Technology I								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VI	3	0	0	45	3	40	60	100

Fabric Spreading and Cutting Methods of fabric spreading, spreading equipment's, computerized spreaders. Types of cutting machines, straight knife, round knife and band knife cutting machines; notchers, drills, computerized cutting machines. .	[9]
Stitches, Seams and Basic Sewing Machine Classification of stitches and seams; stitch and seam properties; sewing threads – functions of sewing thread, characteristics of threads, thread size and ticket number; classification of sewing machines; basic parts and working of SNLS sewing machine, over lock and flat lock sewing machines.	[9]
Anatomy and body measurements Anatomy - Importance of anatomy in garment making; proportion - eight head theory and ten head theory; normal figure and fashion figure - its differences; body measurements - measurements needed for the construction of children's, men's and ladies garments; method and sequence of taking measurements; recording of measurements; meaning of the men's, women's size charts and control dimensions.	[9]
Basic Pattern Makin Basic pattern making – Importance of paper pattern; pattern making tools; Methods of pattern making –Draft pattern technique, flat paper pattern making technique and draping; Drafting of basic pattern – bodice front, back, sleeve, skirt front and back. Drafting of men's shirt components like front, back, yoke and sleeves; pattern grain line and its importance; pattern making for leg garments – front and back for trouser, skirt front and back	[9]
Pattern Grading and Marker Planning Pattern grading – definition and general rules; grading patterns for shirt, trousers, skirt and midi top; basics of computerized pattern making; Advantages of grading technology; Marker planning and marker making	[9]
Total Hours:	**45**

Text Book(s):	
1.	Helen Joseph Armstrong, "Pattern Making for Fashion Design", Harper Collins N.Y., 1995, IIndedition.
2.	Sumathi G.J. "Elements of Fashion and Apparel Design" New Age International Publishers, New Delhi 2002.
Reference(s):	
1.	Gini Stephens Frings, "Fashion-from concept to consumer" 7th Edition, Prentice Hall 2005.
2.	Ruth.E. Glock / Grace I.Kunz, "Apparel manufacturing and sewn product analysis" fourth edition Prentice hall, 2005
3.	Sharon Lee Tate, "Inside Fashion Design", 5thEdition, Pearson Prentice Hall, Delhi 2004.
4.	Geerycooklin" Pattern grading for women's clothes the technology of sizing" OM Books Services, New Delhi, 2000.

SDG 9 – Industry Innovation and Infrastructure

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Course Contents and Lecture Schedule		
S. No.	**Topic**	**No. of hours**
1.0	**Fabric Spreading and Cutting**	
1.1	Methods of fabric spreading	1
1.2	Spreading equipment's	1
1.3	Computerized spreaders	1
1.4	Types of cutting machines, straight knife	2
1.5	Round knife and band knife cutting machines	1
1.6	Notchers, drills	2
2.0	**Stitches, Seams and Basic Sewing Machine**	
2.1	Classification of stitches and seams	2
2.2	Stitch and seam properties	2
2.3	Sewing threads – functions of sewing thread, characteristics of threads	2
2.4	Thread size and ticket number	1
2.5	Classification of sewing machines	1
2.6	Basic parts and working of SNLS sewing machine	1
3.0	**Anatomy and body measurements**	
3.1	Anatomy - Importance of anatomy in garment making	3
3.2	Proportion - eight head theory and ten head theory	1
3.3	Normal figure and fashion figure - its differences	2
3.4	Measurements needed for the construction of children's, men's and ladies garments	2
3.5	Method and sequence of taking measurements; recording of measurements	2
4.0	**Basic Pattern Making**	
4.1	Importance of paper pattern; pattern making tools	2
4.2	Methods of pattern making –Draft pattern technique, flat paper pattern making technique and draping	2
4.3	Drafting of basic pattern – bodice front, back, sleeve, skirt front and back	2
4.4	Drafting of men's shirt components like front, back, yoke and sleeves; pattern grain line	3
5.0	**Pattern Grading and Marker Planning**	
5.1	Pattern grading – definition and general rules	2
5.2	Grading patterns for shirt, trousers	2
5.3	Skirt and midi top; basics of computerized pattern making	2
5.4	Advantages of grading technology	1
5.5	Marker planning and marker making	2
Course Designer(s)		
1	Dr. MB Sampath - sampath@ksrct.ac.in	

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60 TT 603	Technical Textiles II	Category	L	T	P	Credit
		PC	2	0	2	3

Objectives

- Gain fundamental knowledge about agro textiles.
- Provide insights into smart textiles.
- Explore diverse applications of textiles in industries and sports.
- Educate on various aspects of filtration textiles.
- Comprehend the industrial applications of textiles

Pre-requisites

- 60TT504 Technical Textiles-I

Course Outcomes

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

CO1	List the properties required for fabric constituent to use in Agro textiles	Remember
CO2	Summarize the functions & applications of smart textiles	Understand
CO3	List the functions and various requirements of sports textiles	Remember
CO4	Classify the properties required for fabric constituent to use in filtration textiles	Understand
CO5	Outline the miscellaneous & Industrial applications of textile products	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2	2	-	-	-	1	-	-	-	-	1	1	2	-
CO2	3	2	-	-	-	-	-	-	-	1	-	-	-	-	-
CO3	2	3	-	-	-	-	1	-	-	-	-	-	2	-	-
CO4	3	2	2	-	-	-	-	-	1	-	-	-	-	2	-
CO5	2	3	2	-	-	-	-	-	-	-	-	-	1	-	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)				Model Examination (Marks)	End Sem Examination (Marks)	
	Test 1		Test 2				
	Theory	Lab	Theory	Lab	Lab	Theory	Lab
Remember	20	50	20	-	-	34	-
Understand	40	50	40	100	100	66	100
Apply	-	-	-	-	-	-	-
Analyse	-	-	-	-	-	-	-
Evaluate	-	-	-	-	-	-	-
Create	-	-	-	-	-	-	-
Total	60	100	60	100	100	100	100

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 TT 603 – Technical Textiles - II

Semester	Hours / Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VI	2	0	2	60	3	50	50	100

Agro Textiles* Agro Textiles - Fibres, Yarns used, Fabric types and their construction details and properties. Applications of Agro textiles in floriculture, Horticulture, Sericulture and Aquaculture.	[6]
Smart Textiles** Smart Textiles – Introduction, Role of smart materials in textiles, Shape Memory Fibres, Shape Memory Material and Concepts associated with shape memory materials, SMM in smart fabrics and garments.	[6]
Sports Textiles** Sports Textiles: Introduction, Innovation in fibres & textile materials for sportswear – design consideration of sportswear – comfort – sports foot wear: functional design and materials.	[6]
Textiles in Filtration*** Textiles in Filtration**:** Dust collection principles, Fabric construction, finishing treatments. Solid-Liquid Filtration: Yarn types and fabric constructions, Production equipment, finishing treatments, fabric test procedure.	[6]
Industrial Applications of Textiles*** Textiles in Electronics, Textile reinforcement products, Textiles for Banners and Flags, Canvas Covers and Tarpaulins, Ropes and Nets, Home and Office furnishings.	[6]
Practical: 1.Evaluation of water retention of an agro textile 2.Evaluation of Porosity of an agro textile 3.Determination of water vapour permeability of a sports textile 4.Determination of air permeability of a Sports textile 5.Determination of thermal conductivity of a sports textile 6. Determination of filtration efficiency of a filter. 7.Determination of tensile strength of ropes 8.Determination of water repellency of a tarpaulin 9.Determination of tensile strength of canvas covers 10. Determination of stain repellency of an apron **Tools used: Nil**	[30]
Total Hours: (Lecture - 30; Practical - 30)	**60**

Text Book(s):	
1.	A.R.Horrocks& S.C. Anand (Edrs.), “Handbook of Technical Textiles”, The Textile Institute, Manchester, U.K.,WoodheadPublishing Ltd., Cambridge, England, 2000.
2.	E.Willusz, “Military Textiles”, Woodhead Publishing Ltd, 2008.
3.	Richard. A.Scott, “Textiles for Protection”, CRC press, Woodhead Publication, USA, 2005.
Reference(s):	
1.	N.W.M. John, “Geotextiles”, Blackie, London, ISBN: 0-216-91995-9, 1987.
2.	S. Adanur “Wellington Sears Handbook of Industrial Textiles”, Technomic Publishing Co. Inc., Lancaster, Pennsylvania, ISBN:1-56676-340-1, 1995.
3.	S. Anand, “Medical Textiles”, Text. Inst., 1996, ISBN: 185573317X.
4.	T.Matsuo, “Fiber materials for Advanced Technical Textiles”, CRC publication, 2008.

*SDG 15 – Life on land
**SDG 3 – Good Health and Well Being
***SDG 9 – Industry, Innovation and Infrastructure

Passed in BoS Meeting held on 21/11/2023
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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.	Topics	No. of Hours
1	**Agro Textiles**	
1.1	Agro Textiles - Fibres used	1
1.2	Agro Textiles - Yarns used	1
1.3	Fabric types and their construction details	1
1.4	Fabric types and their construction details and properties.	1
1.5	Applications of Agro textiles in floriculture, Horticulture.	1
1.6	Applications of Agro textiles in Sericulture and Aquaculture.	1
2	**Smart Textiles**	
2.1	Smart Textiles – Introduction	1
2.2	Role of smart materials in textiles	1
2.3	Shape Memory Fibres	1
2.4	Shape Memory Material and Concepts associated with shape memory materials	1
2.5	SMM in smart fabrics	1
2.6	SMM in smart garments	1
3	**Sports Textiles**	
3.1	Sports Textiles: Introduction	1
3.2	Innovation in fibres & textile materials for sportswear	2
3.3	Design consideration of sportswear	1
3.4	Comfort - sports foot wear	1
3.5	functional design and materials	1
4	**Textiles in Filtration**	
4.1	Textiles in Filtration**:** Dust collection principles	1
4.2	Fabric construction, finishing treatments	1
4.3	Solid-Liquid Filtration	1
4.4	Yarn types and fabric constructions	1
4.5	Production equipment, finishing treatments	1
4.6	Fabric test procedure.	1
5	**Industrial Applications of Textiles**	
5.1	Textiles in Electronics	1
5.2	Textile reinforcement products	1
5.3	Textiles for Banners and Flags	1
5.4	Canvas Covers and Tarpaulins	1
5.5	Ropes and Nets	1
5.6	Home and Office furnishings	1
Practical:		
1.	Evaluation of water retention of an agro textile	2
2.	Evaluation of Porosity of an agro textile	4
3.	Determination of water vapour permeability of a sports textile	4
4.	Determination of air permeability of a Sports textile	2
5.	Determination of thermal conductivity of a sports textile	2
6.	Determination of filtration efficiency of a filter.	4
7.	Determination of tensile strength of ropes	4
8.	Determination of water repellency of a tarpaulin	2
9.	Determination of tensile strength of canvas covers	4
10.	Determination of stain repellency of an apron	2

Course Designer

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT 6P1	Garment Construction Laboratory I	Category	L	T	P	Credit
		PC	0	0	3	1.5

Objectives

- To give hands on training in constructing stitches and seams
- To give hands on training in darts, tucks and pleats
- To give hands on training in sleeves, collars and pockets
- To give hands on training in pattern making for children's wear
- To give hands on training in constructing basic children's and ladies garments.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Construct types of seams and stitches	Understand
CO2	Construct types of pleats, gathers, darts and tucks	Understand
CO3	Demonstrate the pattern drafting and constructions of baby and children wear	Remember
CO4	Demonstrate the pattern drafting and constructions of men's wear	Remember
CO5	Demonstrate the pattern drafting of women's wear	Remember

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	3	2	2
CO2	3	3	-	-	-	-	-	-	-	-	-	-	3	2	2
CO3	3	3	-	-	-	-	-	-	-	-	-	-	3	2	2
CO4	3	3	-	-	-	-	-	-	-	-	-	-	3	2	2
CO5	3	3	-	-	-	-	-	-	-	-	-	-	3	2	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

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K S Rangasamy College of Technology
TIRUCHENGODE-637 215

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT 6P1 – Garment Construction Laboratory I								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VI	0	0	3	45	1.5	60	40	100

List of Experiments:

1. Construction of different types of stitches and seams.
2. Construction of different types of embroidery stitches.
3. Construction of different types of Pleats and gathers.*
4. Construction of different types of darts, tucks and yokes. *
5. Construction of different types of sleeves, collars and pockets.*
6. Drafting pattern and construction of baby's romper.
7. Drafting pattern and construction of children's summer frock.*
8. Drafting pattern and construction of men's T-Shirt.
9. Drafting pattern and construction men's pyjama.*
10. Drafting pattern for ladies skirt and blouse.

Design Experiments:

1. Design Draft and Construct a Party wear for 7 year Old Toddlers*
2. Design and Construction of Night wear for boys

Lab Manual	
1.	"Textile Testing Lab Manual", Department of Textile Technology, KSRCT.

SDG 12- Responsible Consumption and Production

Course Designer(s)

1. Dr. M.B.Sampath -sampath@ksrct.ac.in

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TIRUCHENGODE-637 215

60 TT 6P2	Textile and Apparel Quality Evaluation Laboratory	Category	L	T	P	Credit
		PC	0	0	3	1.5

Objectives

- To study the different sampling techniques
- To study the evaluation procedure for determining various fibre properties
- To study the evaluation procedure for determining various yarn properties
- To study the evaluation procedure for determining various fabric properties
- To study the evaluation procedure for determining various apparel properties

Pre-requisites

- Nil

Course Outcomes

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

CO1	Analyse the fibre length, fibre fineness and bundle fibre strength	Analyse
CO2	Evaluate the linear density of sliver, roving and yarn. Determine single yarn and ply yarn twist	Analyse
CO3	Evaluate the single yarn strength and lea strength	Analyse
CO4	Analyse the fabric abrasion and pilling	Analyse
CO5	Evaluate the fabric tensile, bursting strength and tearing strength	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	2	3	2	-	-	2	1	2	-	2	-	2	2
CO2	3	3	2	3	2	-	-	2	1	2	-	2	-	2	2
CO3	3	3	2	3	2	-	-	2	1	2	-	2	-	2	2
CO4	3	3	2	3	2	-	-	2	1	2	-	2	-	2	2
CO5	3	2	2	3	2	-	-	2	1	2	-	2	-	2	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)	
	Lab	Activity			
Remember	-	-	-	-	-
Understand	-	-	-	-	-
Apply	-	-	50		50
Analyse	50	25	50		50
Evaluate	-	-	-	-	-
Create	-	-	-	-	-
Total	50	25	100	-	100

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K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. - Textile Technology								
60 TT 6P2 – Textile and Apparel Quality Evaluation Laboratory								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VI	0	0	3	45	1.5	60	40	100

List of Experiments:

1. Determination of fibre length using Baer sorter / fibrograph*
2. Determination of fibre fineness using Sheffield micronaire and Determination of bundle fibre strength and elongation using Stelometer*
3. Determination of fibre trash content using trash analyser *
4. Determination of linear density of sliver, roving and yarn using wrap block and automatic wrap reel*
5. Determination of single yarn and ply yarn twist using manual / electronic twist tester*
6. Determination of single yarn strength and elongation using single thread strength tester*, Determination of lea strength using mechanical lea tester*
7. Determination of fabric GSM and fabric stiffness using stiffness tester *
8. Determination of crease recovery angle using crease recovery tester*
9. Determination of fabric pilling using ICI pill box tester and Determination of fabric abrasion using Martindale abrasion tester*
10. Determination of fabric tensile strength using fabric strength tester, bursting strength using bursting strength tester and tearing strength using Elmendorf tear tester*
11. Mini Project

Design Experiments: Nil

Lab Manual	
1.	"Textile Testing Lab Manual", Department of Textile Technology, KSRCT.

*SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Course Designer(s)

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

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TIRUCHENGODE-637 215

60 TT 6P3	Design Thinking and Product Development Laboratory	Category	L	T	P	Credit
		PC	0	0	2	1

Objectives

- To introduce design thinking principles.
- To explore sustainable design practices.
- To develop skills in material testing and wearability analysis.
- To provide hands-on experience in prototyping.
- To introduce smart textiles and wearable technology.

Pre-requisites

- Design thinking and Innovation

Course Outcomes

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

CO1	Apply design thinking methodologies to identify opportunities	Apply
CO2	Design and create eco-friendly textile products	Apply
CO3	Conduct material testing and wearability analysis	Analyse
CO4	Design and develop a Prototype	Apply
CO5	Integrate smart textiles into wearable products	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	2	3	-	-	-	-	-	-	-	-	3	2	-
CO2	3	3	3	3	-	-	-	-	-	-	-	-	3	3	-
CO3	3	3	3	3	-	-	-	-	-	-	-	-	3	3	-
CO4	3	3	3	3	-	-	-	3	3	3	-	3	3	3	3
CO5	3	3	3	3	-	-	-	3	3	3	-	3	3	3	3
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	Lab	Activity		
Remember	-	-	20	20
Understand	-	-	20	20
Apply	25	13	30	30
Analyse	25	12	30	30
Evaluate	-	-	-	-
Create	-	-	-	-
Total	50	25	100	100

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Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B. Tech. – Textile Technology								
60 TT 6P3 - Design Thinking and Product Development Laboratory								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VI	0	0	2	30	1	60	40	100

Idea Generation Opportunity Identification - Product Planning - Identifying Customer Needs - Product Specifications - Concept Generation - Concept Selection.	[6]
Eco friendly design / Upcycling Sustainable textile materials and production processes. - Design strategies for minimizing environmental impact.- Upcycling and repurposing textiles: techniques and examples.	[6]
Material Testing and Wearability Analysis Fabric properties and their impact on product performance.- Testing standards and methods: durability, comfort, aesthetics.- Wearability analysis and user feedback integration.	[6]
Prototyping Rapid prototyping techniques in textiles.- Iterative design process: from concept to prototype.- Tools and equipment for textile prototyping.	[6]
Integration of Smart textiles Fundamentals of smart textiles: materials and components. - Design considerations for integrating electronics into textiles. - Case studies of smart textile applications.	[6]
Total Hours:	30
Text Book(s):	

1.	**Product design and development** Author: Karl T. Ulrich and Steven D. Eppinger, Publisher: Tata McGraw-Hill , 3rd edition.
Reference(s):	
1.	**Engineering textiles, Integrating the design and manufacture of textile products** Author: Y. E. El Mogahzy Publisher: Wood Head Publishing Ltd. Cambridge, England
2.	**The Design logic of textile products** Author: T Matsuo & M. N. Suresh Textile progress, Vol 27, No.3, Textile Institute.
3.	**Engineering apparel fabrics and garments** Author: J Fan and L Hunter Publisher Woodhead Publishing Ltd.

*SDG:9 - Industry Innovation and Infrastructure

Passed in BoS Meeting held on 21/11/2023
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Head of the Department
Department of Textile Technology
K S Rangasamy College of Technology
TIRUCHENGODE-637 215

60 CG 0P5	Comprehension Test*	Category	L	T	P	Credit
		CG	0	0	2	1*

Objectives

- To evaluate the knowledge gained in core courses relevant to the programme of study.
- To assess the technical skill in solving complex engineering problems.

Pre-requisites

- **Fundamental knowledge in all core subjects.**

Course Outcomes

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

CO1	Infer knowledge in their respective programme domain.	Apply
CO2	Attend interviews for career progression	Apply
CO3	Exhibit professional standards to solve engineering problems	Apply
CO4	Promote holistic approach to problem solving	Apply
CO5	Examine the competency of graduates in specific programme domain	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	2	2					1	2	2	3	3	2	1
CO2	3	3	2	2					1	2	2	3	2	1	1
CO3	3	3	2	2					1	2	2	3	3	3	2
CO4	3	3	2	2					1	2	2	3	3	3	2
CO5	3	3	2	2					1	2	2	3	3	2	1
3 - Strong; 2 - Medium; 1 - Some															

The overall knowledge of the candidate in various courses he/she studied shall be evaluated with multiple choice questions.

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TIRUCHENGODE-637 215

60 TT E 31	Fibre Materials for Advanced Technical Textiles	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- Understand the history, definitions, and scope of technical textiles.
- Study the properties, production, and environmental impact of natural, regenerated, and synthetic fibers.
- Learn about the industrial applications of fibers and related technologies.
- Analyse the environmental sustainability of fiber production processes.
- Encourage the use of emerging materials and assess their impact on the industry.

Pre-requisites

- Fibre Science

Course Outcomes

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

CO1	Classify and understand the historical and market contexts of technical textiles.	Understand
CO2	Gain detailed knowledge of various fiber types and their environmental considerations.	Remember
CO3	Apply knowledge of fiber technologies across multiple industries.	Apply
CO4	Evaluate and propose sustainable practices in fiber production.	Analyse
CO5	Explore and critique future materials and technological innovations in textiles.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	2	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	2	2	-	-	-	-	-	-	-	-	-	3	1	-
CO3	3	2	2	-	-	-	-	-	-	-	-	-	2	2	-
CO4	3	2	2	-	-	-	-	-	-	-	-	-	2	2	-
CO5	3	2	2	-	-	-	-	-	-	-	-	-	3	1	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT E 31 - Fibre Materials for Advanced Technical Textiles								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VI	3	0	0	45	3	40	60	100

Introduction and Overview of Technical Textiles History and evolution of technical textiles, Definitions and classifications: Aggrotech or Agro Textile Buildtech, Clothtech, Geotech or Geotextiles, Hometech or Home Textiles, Indotech or Industrial Textiles, Medical Textiles, Mobiltech / Automobiles, Oekotech, Packtech or Packaging Textile, Protech or Protective Textile, Sportech / Sports Textiles, Market analysis and industry trends	[9]
Natural and Regenerated Fibers* Natural fibers: Cotton, wool, flax, jute, bamboo, silk; Regenerated fibers: Rayon, lyocell, modal; Comparisons of mechanical and chemical properties; Sustainable sourcing and environmental impacts	[9]
Synthetic Fibers and Their Applications Synthetic fibers: Polyester, nylon, polypropylene, acrylic, spandex; Fiber spinning technologies: Melt, wet, dry spinning; Enhancement techniques: Drawing, texturizing, heat-setting; Case studies on specific applications in industries like automotive, aerospace, and protective clothing	[9]
High Performance and Specialty Fibers*** High-performance fibers: carbon, glass, aramid, UHMWPE; Manufacturing technologies: Gel spinning, electrospinning; Applications in challenging environments: Space, military, fire-resistant applications; Innovations in fiber modifications for enhanced properties	[9]
Sustainability and Innovations in Fiber Technology** Sustainability issues in fiber production: Energy consumption, waste management, recycling; Emerging materials: Biopolymers, nanofibers, smart textiles; Future technologies and their potential impacts on the industry and environment; Policy and regulation in sustainable textile manufacturing	[9]
Total Hours:	**45**

Text Book(s):	
1.	Horrocks, A. R., & Anand, S. C. (Eds.). (2016). Handbook of Technical Textiles (2nd ed.). Woodhead Publishing
2.	Sinclair, R. (Ed.). (2015). Textiles and Fashion: Materials, Design and Technology. Woodhead Publishing.
Reference(s):	
1.	Askeland, D. R., Fulay, P. P., & Wright, W. J. (2011). The Science and Engineering of Materials (6th ed.). Cengage Learning.
2.	Blackburn, R. S. (Ed.). (2009). Sustainable Textiles: Life Cycle and Environmental Impact. Woodhead Publishing.
3.	Alagirusamy, R., & Das, A. (2010). Technical Textile Yarns. Woodhead Publishing

*SDG 9: Industry, Innovation, and Infrastructure

**SDG 12: Responsible Consumption and Production

*** SDG 14 - Life below Water

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Department of Textile Technology
K S Rangasamy College of Technology
TIRUCHENGODE-637 215

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Introduction and Overview**	
1.1	Introduction to Technical Textiles	1
1.2	History and Evolution of Technical Textiles	1
1.3	Classifications and Definitions	2
1.4	Overview of Categories (Aggrotech to Sportech)	3
1.4	Market Analysis and Industry Trends	2
2.0	**Natural and Regenerated Fibers**	
2.1	Introduction to Natural and Regenerated Fibers	1
2.2	Natural Fibers: Types and Properties	2
2.3	Regenerated Fibers: Types and Properties	2
2.4	Sustainability and Environmental Impacts	2
2.5	Comparative Analysis and Applications	2
3.0	**Synthetic Fibers and Their Applications**	
3.1	Introduction to Synthetic Fibers	1
3.2	Fiber Spinning Technologies	2
3.3	Enhancement Techniques in Fiber Production	2
3.4	Case Studies: Automotive, Aerospace, and Protective Clothing	3
4.0	**High Performance and Specialty Fibers**	
4.1	Introduction to High-Performance Fibers	1
4.2	Manufacturing Technologies	2
4.3	Applications in Challenging Environments	2
4.4	Innovations in Fiber Modifications	2
4.5	Future Trends and Potential	2
5.0	**Sustainability and Innovations in Fiber Technology**	
5.1	Sustainability Issues in Fiber Production	2
5.2	Emerging Materials: Biopolymers, Nanofibers, Smart Textiles	2
5.3	Future Technologies and Their Environmental Impacts	2
5.4	Policy and Regulation	1
5.5	Case Studies and Industry Examples	2

Course Designer(s)

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT E 32	Process Control in Weaving and Chemical Processing	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- Conveying expertise in process control for winding.
- Disseminating knowledge on process control in warping and sizing
- Transmitting insights into process control within the weaving stage.
- Providing understanding of process control in preparatory processes.
- Offering insights into process control in dyeing, printing, and finishing

Pre-requisites

- Fabric Manufacturing Technology II

Course Outcomes

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

CO1	State the process control in warp and weft winding	Understand
CO2	Describe the process control of warping and sizing	Remember
CO3	Explain the control of loom shed, loss of efficiency by snap reading and hard waste control	Understand
CO4	Organize process control measures in preparatory process	Understand
CO5	Develop process control measures in dyeing, printing and finishing process	Remember

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	2	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	2	2	-	-	-	-	-	-	-	-	-	3	1	-
CO3	3	2	2	-	-	-	-	-	-	-	-	-	2	2	-
CO4	3	2	2	-	-	-	-	-	-	-	-	-	2	2	-
CO5	3	2	2	-	-	-	-	-	-	-	-	-	3	1	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT E 32 - Process Control in Weaving and Chemical Processing								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VI	3	0	0	45	3	40	60	100

Process control in winding * Scope and approach of process control in warp winding - control of quality of knot, producing good packages, control of efficiency of fault removal, process parameters, performance in winding; Process control in pirn winding-Scopeand approach, Minimizing end breaks, stoppages due to mechanical failures	[9]
Process control in warping and sizing * * Scope and approach of process control in warping and sizing- minimizing end breaks in warping, performance, quality and productivity in warping; Choice of size recipe and size pick- up, preparation of size recipe, control of size pick-up, control of yarn stretch and moisture in sized yarns, quality of sized beams, control of productivity and size losses.	[9]
**Process control in weaving ** ** Scope and approach of process control in weaving- control of loom speed and loom efficiency, control of loss of efficiency by snap reading, loom performance, quality of yarn and loom allocation; Fabric defects, causes, control measures. Inspection standard, cloth realization. Online and off-line process control; Cost control in weaving.	[9]
Process control in Wet processing (Preparatory Process)* ** Process control in Preparatory Process- Grey Inspection of Fabrics, Process control measures in desizing, scouring, bleaching and mercerization; Important functions of a control laboratory in a modern process house. Quality evaluation of preparatory processed material.	[9]
Process control in Dyeing , Printing and Finishing * ** Process control measures in dyeing, printing and finishing - Process control in dyeing of various materials; Process control in various printing methods; Process control in various finishing methods.	[9]
Total Hours:	**45**

Text Book(s):	
1.	AbihijitMajumdar, Apurba Das, Algarsamy.R and Kothari.V.K, "Process manufacring", Woodhead Publishing Ltd, New Delhi, 2013.
2.	Thilagavathi.G and Karthi.T "Process control and yarn quality in Spinning" Woodhead Publishing,2015.
Reference(s):	
1.	Stanley Bernard Brahams, "The Fundamentals of Quality Assurance in the Textile Industry" Hardcoverpublisher, 2016
2.	Georgi Damyanov and Diana Germanova-Krasteva, **"**Textile Processes: Quality Control and Design ofExperiments" Hard cover publisher, 2013.
3.	Chemical Process Control: An Introduction to Theory and Practice, Pearson Education India; First Edition (1 January 2015); Pearson India, 978-9332549463

*SDG 9: Industry, Innovation, and Infrastructure

**SDG 12: Responsible Consumption and Production

*** SDG 14 - Life below Water

Passed in BoS Meeting held on 21/11/2023
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BoS Chairman
Head of the Department
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K S Rangasamy College of Technology
TIRUCHENGODE-637 215

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Process control in winding**	
1.1	Introduction of process control in winding	1
1.2	Scope and approach of process control in warp winding	1
1.3	Control of quality of knot	1
1.4	Control of efficiency of fault removal	1
1.5	Performance in winding	1
1.6	Process control in pirn winding	1
1.7	Minimizing end breaks	1
1.8	Stoppages due to mechanical failures	2
2.0	**Process control in warping and sizing**	
2.1	Introduction of process control in warping & sizing	1
2.2	Minimizing end breaks in warping, performance	1
2.3	Quality and productivity in warping	1
2.4	Size recipe and size pick- up	1
2.5	Preparation of size recipe	1
2.6	Control of yarn stretch and moisture in sized yarns	2
2.7	Quality of sized beams	1
2.8	Control of productivity and size losses	1
3.0	**Process control in weaving**	
3.1	Introduction of process control in weaving	1
3.2	Control of loom speed and loom efficiency	1
3.3	Control of loss of efficiency	1
3.4	Loom performance, quality of yarn and loom allocation	1
3.5	Fabric defects, causes, control measures	1
3.6	Inspection standard and cloth realization	1
3.7	Online and off-line process control	1
3.8	Cost control in weaving	2
4.0	**Process control in wet processing (Preparatory Process)**	
4.1	Process control in Preparatory Process	1
4.2	Inspection of grey fabrics	1
4.3	Process control measures in desizing and scouring	1
4.4	Process control measures in scouring	1
4.5	Process control measures in bleaching	1
4.6	Process control measures in mercerization	1
4.7	Functions of control laboratory in modern process house	2
4.8	Quality evaluation of preparatory process	1
5.0	**Process control in Dyeing , Printing and Finishing**	
5.1	Introduction of process control in wet process	1
5.2	Process control measures in dyeing	1
5.3	Process control measures in printing	2
5.4	Process control measures in finishing	1
5.5	Process control in dyeing of various materials	2
5.6	Process control in various printing methods	1
5.7	Process control in various finishing methods	1

Course Designer(s)

1 Mr.M.Arunkumar - arunkumar@ksrct.ac.in

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Approved in Academic Council Meeting held on 23/12/2023

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

60 TT E 33	Industrial Engineering in Textile and Clothing Industry	Category	L	T	P	Credit
		PE	2	0	2	3

Objectives

- To study about the concept of industrial engineering
- To understand the procedure of Method study and various types of charts
- To study about work measurements and calculate the standard time
- To understand plant layout and line balancing techniques
- To describe work environment and material handling techniques

Pre-requisites

- Garment Manufacturing Technology II

Course Outcomes

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

CO1	Summarize the basic concepts of industrial engineering, productivity and work content	Understand
CO2	Demonstrate the procedure for conducting method study using different charts and diagrams	Analyse
CO3	Outline the concepts of motion economy and calculate standard time for various	Understand
CO4	Attribute the requirement of product layout and applications of Industrial Engineering	Apply
CO5	Analyse the factors influencing work environment and characteristics of material handling	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	-	-	-			-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	3	3	-	-	-	-	-	-	2	2	-
CO3	3	-	-	-	3	3	-	-	-	-	-	-	3	2	-
CO4	2	-	-	-	-	-	-	-	-	-	-	-	3	2	-
CO5	2	-	-	-	-	-	-	-	-	-	-	-	2	1	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)				Model Examination (Marks)	End Sem Examination (Marks)	
	Test 1		Test 2				
	Theory	Lab	Theory	Lab	Lab	Theory	Lab
Remember	20	-	20	-	-	34	-
Understand	20	-	10	-	-	46	-
Apply	-	50	30	50	50	-	50
Analyse	20	50	-	50	50	20	50
Evaluate	-	-	-	-	-	-	-
Create	-	-	-	-	-	-	-
Total	60	100	60	100	100	100	100

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S. Rangasamy College of Technology – Autonomous R2022

B. Tech. - Textile Technology

60 TT E 33 - Industrial Engineering in Textile and Clothing Industry

Semester	Hours / Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VI	2	0	2	60	3	50	50	100

Concepts of Industrial Engineering and Productivity Industrial Engineering - definition and scope, Role of industrial engineers, Tools, techniques and benefits of industrial engineering; Productivity – definition, different Productivity indices, factors influencing productivity; Reasons and suggestions for improving productivity.	[6]
Work Study and Method Study Work study and Method study – definition and purpose, Charts indicating process sequence – Outline process chart, Flow process chart (man, material and equipment type); Charts using time scale - multiple activity charts; Diagrams indicating movement – flow diagram, string diagram and travel chart.	[6]
Motion Study and Work Measurement Motion study – Principles of Motion economy, classification of movements, Two handed process chart; Micro motion study –chart, SIMO chart; Work measurement– Techniques of time study – stop watch method; Rating factor, Allowances,	[6]
Product Layout Lay out – definition and types of garments lay out with examples, Steps for developing a new layout; Application of IE techniques – capacity study calculation, measurement of operator performance, WIP; Operation Bulletin – objectives and examples.	[6]
Work Environment and Material Handling Work environment – factors influencing working environment, lighting, ventilation, temperature control, humidity control and noise control; Ergonomics: Classification of material handling equipment's used in textile and apparel industry.	[6]
Practical: 1. Study of existing method involved in garment manufacturing. 2. Suggestions for improvement in new method. 3. Time study for construction of T-Shirt 4. Time study for construction of Trouser 5. Time study for construction of Skirt. 6. Economical lay out for garment production. 7. Standard time – method for calculating SAM**.** 8. TAKT time calculation. 9. Calculate cutting, sewing, and finishing capacities for a new factory setup. 10. Mini-Project	[30]
Total Hours: (Lecture - 30; Practical - 30)	**60**

Text Book(s):

1.	International Labour Organization, Geneva, "Introduction of Work Study", Universal Publishing Corporation, Mumbai, 2006.
2.	Ramesh Babu V, "Industrial Engineering in Apparel Production", Woodhead Publications India Pvt. Ltd, New Delhi, 2012.

Reference(s):

1.	KiellB.Zandin, "Maynard's "Industrial Engineering Hand Book", McGraw Hill, Inc., New York, 2001.
2.	James M Apple, "Plant Layout and Materials Handling", John Wiley & Sons, 1977.
3	Rajesh Bheda, "Managing Productivity of Apparel Industry" CBS Publishers and distributors, New Delhi 2002.
4	"Industrial engineering manual for textile industry", Wiley Eastern (p) Ltd., New Delhi, 1978.
5	Manoj Tiwari, Prabir Jana, Industrial Engineering and Lean Manufacturing, Publisher: Apparel Resources Pvt. Ltd., 2020.

*SDG 9 – Industry Innovation and Infrastructure

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of Hours
1	**Concepts of Industrial Engineering and Productivity**	
1.1	Industrial Engineering - definition and scope,	1
1.2	Role of industrial engineers, Tools, techniques and benefits of industrial engineering	2
1.3	Productivity – definition, different Productivity indices,	1
1.4	Factors influencing productivity	1
1.5	Reasons and suggestions for improving productivity	1
2	**Work Study and Method Study**	
2.1	Work study – definition and purpose	1
2.2	Method study – definition and purpose	1
2.3	Method analysis charts, symbols and diagrams	1
2.4	Charts indicating process sequence – outline process chart, Flow process chart (man, material and equipment type)	1
2.5	Charts using time scale - multiple activity charts	1
2.6	Diagrams indicating movement – flow diagram, string diagram and travel chart.	1
3	**Motion Study and Work Measurement**	
3.1	Motion study – Principles of Motion economy, classification of movements	1
3.2	Two handed process chart, Micro motion study –chart, SIMO chart	1
3.3	Work measurement– definition and purpose	1
3.4	Techniques of time study – stop watch method	1
3.5	Rating factor – Definition and types;	1
3.6	Allowances – definition and types	1
4	**Product Layout**	
4.1	Lay out – definition and types of garments lay out with examples	1
4.2	Steps for developing a new layout	1
4.3	Application of IE techniques	1
4.4	capacity study calculation, measurement of operator performance	1
4.5	WIP (Work in Progress)	1
4.6	Operation Bulletin – objectives and examples.	1
5	**Work Environment and Material Handling**	
5.1	Work environment – factors influencing working environment	1
5.2	Lighting, ventilation, temperature control, humidity control and noise control	2
5.3	Ergonomics: Classification of material handling equipment's	1
5.4	Material handling equipment's used in textile and apparel industry	2
Practical:		
11.	Study of existing method involved in garment manufacturing.	2
12.	Suggestions for improvement in new method.	2
13.	Time study for construction of T-Shirt	2
14.	Time study for construction of Trouser	2
15.	Time study for construction of Skirt.	2
16.	Economical lay out for garment production.	2
17.	Standard time – method for calculating SAM**.**	2
18.	TAKT time calculation.	2
19.	Calculate cutting, sewing, and finishing capacities for a new factory setup.	2
20.	Mini-Project	12

Course Designer(s)

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT E 34	Textile Industry and Mill Management	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To acquire knowledge on the scenario of the present textile industry
- To encompass the production management techniques
  To understand the functions of personnel management
- To learn the concepts of financial management
- To know the different management tools

Pre-requisites

- Yarn Manufacturing and Fabric Manufacturing

Course Outcomes

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

CO1	Explain the procedure for establishing a new textile unit	Understand
CO2	Discuss the application of ERP in textile industry	Remember
CO3	Describe regarding the human resource planning and grading	Understand
CO4	Analyse the profit and loss account and balance sheet	Remember
CO5	Appraise on the various management tools	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1	1	-	-	-	-	-	-	-	-	-	2	2	2
CO2	2	3	2	-	-	-	-	-	-	-	-	-	2	1	1
CO3	2	2	1	-	-	-	-	-	-	-	-	-	1	2	2
CO4	2	3	-	-	-	-	-	-	-	-	-	-	2	1	1
CO5	3	2	3	-	-	-	-	-	-	-	-	-	2	2	1
3 - Strong; 2 - Medium; 1 – Some															

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech – Textile Technology

60 TT E 34 - Textile Industry and Mill Management

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VI	3	0	0	45	3	40	60	100

Textile Industry ** Indian Textile and clothing industry scenario, Procedure to set up a new textile / apparel unit, SWOT analysis of Indian Textile Industry, National Textile Policy, TN New Integrated Textile Policy, Promotional schemes for textile announced by the government. TMTT, TUFS, TWRFS Service organizations - Role of EPC, TRA, CITI, ITTA, Textile Committee. Ministry of Textiles – Function.	[9]
Production Management * Spin plan, Weave plan, Garmenting Plan and implementation; modification of plan on need basis. Productivity analysis and its control in spinning and weaving. Production Possibility Curve, Operational chart, PERT, CPM, Inventory control, ERP: Application of ERP in Textile Industry-SAP	[9]
Personnel Management *** Functions of Personnel Management & time office, Human Resource Planning, performance appraisal, production performance based incentive schemes, Training and Development. Job description, Job classification and Job evaluation. Grading the employee: Rating system, Psychological test, Predictive Index, Myer Bridge Type Indicator. Basics of Labour Legislation. Wage structure and its components.	[9]
Financial Management ** Financial Management-concept, scope, functions, financial management cycle, sources of finance, Accounting-branches, functions, rules of accounting, accounting process-book keeping, journal posting, ledger, trial balance, trading account, profit and loss account and balance sheet. Accounting standard-Indian accounting standards & International accounting standards. Profit share to employees	[9]
Management Tools ** Concept of Total quality Management, Quality circle, Quality Management System, Inventory Management, Total Productive Maintenance, Kaizen. Management Information System, Supply Chain Management, Customer relationship management. Business Process Reengineering.	[9]
Total Hours:	**45**

Text Book(s):

1.	Rattan JB," Modern Textile Management", Abhishek Publications, Chandigarh, 2017.
2.	Naresh Grover, "Textile Mill Management: Theory and Practice", Random Publications, Delhi, 2016.

Reference(s):

1.	Purushothama B,"Training and development of technical staff in the textile industry", Wood head publishing India Pvt Ltd, NewDelhi, 2012.
2.	Francis Cherunulam,"International trade and export management", Himalaya publishing house, NewDelhi, 2019.
3.	Ormerod.A., "Management of Textile Production", Buttorworth & Co Ltd, London, 1979.
4.	Ormerod. A, "Textile Project Management", Textile Institute, 1992
5.	Textile Mill Management: Theory and Practice ISBN -13:978-9351 1187 32 ISBN-10: 9351 1187 38 – 2016

*SDG 8: Decent Work and Economic Growth
**SDG 9: Industry, Innovation, and Infrastructure
***SDG 4: Quality Education

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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.	**Topics**	**No. of hours**
1.0	**Textile Industry**	
1.1	Indian Textile and clothing industry scenario	1
1.2	Procedure to set up a new textile/apparel unit	1
1.3	SWOT analysis of the Indian Textile Industry	1
1.4	National Textile Policy	1
1.5	TN New Integrated Textile Policy	1
1.6	Promotional schemes for textile announced by the government	1
1.7	TMTT, TUFS, TWRFS Service organizations	2
1.8	Role of EPC, TRA, CITI, ITTA	2
1.9	Ministry of Textiles – Functions	1
2.0	**Production Management**	
2.1	Spin plan, Weave plan	1
2.2	modification of plan on need basis	1
2.3	Productivity analysis and its control in spinning and weaving	1
2.4	Production Possibility Curve	1
2.5	Operational chart, PERT	1
2.6	CPM, Inventory control	1
2.7	ERP: Application of ERP in Textile Industry	2
2.8	SAP Analysis	1
3.0	**Personnel Management**	
3.1	Functions of Personnel Management & time office	1
3.2	Human Resource Planning	1
3.3	performance appraisal	1
3.4	production performance based incentive schemes	1
3.5	Training and Development	1
3.6	Job description, Job classification and Job evaluation	1
3.7	Grading the employee: Rating system	1
3.8	Psychological test, Predictive Index	1
3.9	Myer Bridge Type Indicator	1
3.10	Basics of Labour Legislation	1
3.11	Wage structure and its components	1
4.0	**Financial Management**	
4.1	Financial Management-concept, scope, functions	1
4.2	financial management cycle	1
4.3	sources of finance	1
4.4	Accounting-branches, functions	1
4.5	rules of accounting, accounting proces	1
4.6	book keeping, journal posting, ledger, trial balance	1
4.7	trading account, profit and loss account and balance sheet	1
4.8	Accounting standard-Indian accounting standards & International accounting standards	2
4.9	Profit share to employees	1
5.0	**Management Tools**	

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5.1	Concept of Total quality Management	1
5.2	Quality circle, Quality Management System	1
5.3	Inventory Management	1
5.4	Total Productive Maintenance, Kaizen	1
5.5	Management Information System	1
5.6	Supply Chain Management	1
5.7	Customer relationship management	1
5.8	Business Process- Reengineering	2

Course Designer(s)

1. Dr KR. Nandagopal, nandagopal@ksrct.ac.in

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT E 35	Medical Textiles	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To explain key concepts associated with healthcare textiles.
- To explore manufacturing techniques employed in the production of diverse implantable medical textile products.
- To impart knowledge on the characteristics and varied applications of non-implantable and extracorporeal medical textile products.
- To develop an understanding of the materials utilized in wound dressing and their respective applications.
- To impart knowledge on smart medical textiles and legal issues in medical textiles.

Pre-requisites

Technical Textile I & II

Course Outcomes

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

CO1	Explain the concepts related to healthcare textiles.	Understand
CO2	Interpret techniques involved in the production of various implantable medical textile products.	Understand
CO3	Develop knowledge on the characteristics and uses of non-implantable and extracorporeal medical textile products.	Apply
CO4	Define the materials used in wound dressing	Remember
CO5	Explain the concepts related to smart medical textiles.	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	2	-	-	-	-	-	-	-	-	-	1	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	1	2	-
CO3	3	3	-	-	-	-	-	-	-	-	-	-	2	-	1
CO4	3	3	2	-	-	-	-	-	-	-	-	-	-	-	2
CO5	3	3	2	-	-	-	-	-	-	-	-	-	-	-	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 TT E 35 – Medical Textiles

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VI	3	0	0	45	3	40	60	100

Health Care Textiles ** Classification of medical textiles - current market scenario in international and national level - government initiatives. Operating room garments - personal health care and hygiene products and its testing methods. Applications of non-woven in medicine - textiles for infection prevention control.	[9]
Implantable Textiles ** Implantable textiles: hernia mesh - vascular prostheses - stents. Tissue engineering: properties and materials of scaffolds- relationship between textile architecture and cell behaviour - applications of textile scaffolds in tissue engineering.	[9]
Non-Implantable and Extra Corporeal Textiles ** Bandages-types - properties and applications - compression garments-types- properties and applications. Sutures: types and properties. Extra corporeal materials: Cartilages, liver, ligaments- kidney, tendons and cornea.	[9]
Wound Dressing Materials ** Wound: types and healing mechanism. Textile materials for wound dressing - bio active dressing - anti microbial textiles dressing - composite dressing - testing of wound care materials. Reusable medical textiles: types, advantages, physical properties and performance.	[9]
Smart Medical Textiles and Legal Issues** Smart textiles - types, characteristics - smart textiles in wound care- applications of phase changeand shape memory materials - mobile health monitoring- electronics in medical textiles- Smart textiles in rehabilitation and applications. Legal and ethical values involved in the medical textile materials.	[9]
Total Hours:	**45**

Text Book(s):

1.	Rajendran.S, "Advanced Textiles for Wound Care", Wood Head publishing in Textiles:Number 85, 2009.
2.	Bartel.V.T, "Handbook of medical textiles", Wood Head publishing, 2011.
3.	Van Langenhove, "Smart textiles for medicine and health care – materials, systems and applications", Wood Head publishing, 2007.

Reference(s):

1.	Buddy D.Ratner and Allan S. Hoffman, "Biomaterials science – An introduction tomaterials in medicine", Academic press, 1996.
2.	Pourdegtimi.B, "Vascular grafts: Textile structures and their performance", Textileprogress, vol. 15, No. 3, the Textile Institute, 1986.
3.	Cusick. GE and Teresa Hopkins, "Absorbent incontinence products", the TextileInstitute, 1990.
4.	Kothari.V.K. "Progress in textiles: Technology developments and applications",volume 3, IAFL Publications, 2008.

**SDG 3 – Good Health and Well Being

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of hours
1.0	**Health Care Textiles**	
1.1	Classification of medical textiles	1
1.2	Current market scenario in international and national level	1
1.3	Government initiatives	1
1.4	Operating room garments	1
1.5	Personal health care and hygiene products and its testing methods.	2
1.6	Applications of non-woven in medicine	2
1.7	Textiles for infection prevention control	1
2.0	**Implantable Textiles**	
2.1	Implantable textiles: hernia mesh	1
2.2	Vascular prostheses and stents	2
2.3	Tissue engineering: properties and materials of scaffolds	2
2.4	Relationship between textile architecture and cell behaviour	2
2.5	Applications of textile scaffolds in tissue engineering	2
3.0	**Non-Implantable and Extra Corporeal Textiles**	
3.1	Bandages and its types	1
3.2	Bandages - properties and applications	2
3.3	Compression garments and its types	1
3.4	Properties and applications of compression bandages.	1
3.5	Sutures: types and properties.	2
3.6	Extra corporeal materials: Cartilages, liver, ligaments	1
3.7	Extra corporeal materials: kidney, tendons and cornea	1
4.0	**Wound Dressing Materials**	
4.1	Wound: types and healing mechanism.	1
4.2	Textile materials for wound dressing	2
4.3	Bio active dressing - anti microbial textiles dressing	2
4.4	Composite dressing - testing of wound care materials.	1
4.5	Reusable medical textiles: types, advantages	1
4.6	Physical properties and performance.	2
5.0	**Smart Medical Textiles and Legal Issues**	
5.1	Smart textiles – types, characteristics	1
5.2	Smart textiles in wound care	1
5.3	Applications of phase changeand shape memory materials	1
5.4	Mobile health monitoring- electronics in medical textiles	2
5.5	Smart textiles in rehabilitation and applications.	1
5.6	Legal and ethical values involved in the medical textile materials	2

Course Designer(s)

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

60 TT E 36	Production and Operation Management	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To know the basic concepts and functions of production and operation management.
- To enable the students to learn about the production and operation systems.
- To understand the basic concepts of production process and planning.
- To impart the basic concepts of production and operation management process.
- To understand the production and operation management control processes.

Pre-requisites

- Total Quality Management

Course Outcomes

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

CO1	To understand the basics and functions of Production and Operation Management	Understand
CO2	To learn about the Production and Operation Systems	Understand
CO3	To understand the Production and Operations Planning Techniques followed in Industries.	Understand
CO4	To know about the Production and Operations Management Processes in organizations.	Understand
CO5	To comprehend the techniques of controlling Production and Operations in industries	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	3	2	1
CO2	2	2	-	-	-	-	-	-	-	-	-	-	3	2	1
CO3	2	3	-	-	-	-	-	-	-	-	-	-	3	3	2
CO4	3	2	-	-	-	-	-	-	-	-	-	-	3	3	2
CO5	2	3	-	-	-	-	-	-	-	-	-	-	3	3	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 TT E 36 – Production and Operations Management

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VI	3	0	0	45	3	40	60	100

Introduction to Production and Operation Management. Functions of production management, Relationship between production and other functions, Production management and operation management, characteristics of modern production and operation management, organization of production function, recent trends in operation and production management, production as an organizational function, decision making in production operation research.	[9]
Production and Operation Systems* Production systems, principles, models, CAD and CAM, Automation in production, functions and significance, Capacity and facility planning, importance of capacity planning, capacity measurement, Capacity Requirement Planning (CRP) process for manufacturing and service industry.	[9]
Production and Operation Planning Facility planning, Location of facilities, location flexibility, Facility design process and techniques, Location break even analysis, Production process planning, characteristics of production process systems, steps for production process, Production planning control – functions, planning phases, action phase, control phase, Aggregate production planning.	[9]
Production and Operation Management Process Process selection with PLC phases, process simulation tools, Work study – significance, methods, evolution of normal/standard time, Job design and rating, Value analysis, Plant layout – meaning, characters, plant location techniques, types, MRP and layout design, Optimization and Theory of Constraints (TOC), Critical Chain Project Management (CCPM), Relationship (REL) chart, Assembly line balancing, Plant design optimization, Forecasting methods.	[9]
Controlling Production and Operation Management Material Requirement Planning (MRP), concept, process and control, Inventory control systems and techniques, JIT and Lean manufacturing, network techniques, Quality management – Preventive Vs Breakdown maintenance for quality, Techniques for measuring quality, Control chart (X, R, p, np and C charts), Cost of quality, Continuous improvement (Kaizen), Quality awards, supply chain management, total quality management, six sigma approach and Zero Defective Manufacturing.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Panneerselvam R., “Production and Operation Management”, Prentice Hall of India, 2002
2.	Chary S.N, Production and Operations Management, TMH Publications, 2010
Reference(s):	
1.	Adam Jr. Ebert, Production and Operations Management, PHI Publication, 1992
2.	Mikell P. Groover, Automation, Production Systems, and Computer-Integrated Manufacturing, Pearson, 2007
3.	Terry Hill, Operation Management. Pal Grave McMillan (Case Study).2005.
4.	Amitabh Raturi, Production and Inventory Management, , 2008.

*SDG 9 – Industry Innovation and Infrastructure

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of hours
1.0	**Introduction to Production and Operation Management**	
1.1	Functions of production management, Relationship between production and other functions	1
1.2	Production management and operation management	2
1.3	Characteristics of modern production and operation management	1
1.4	Organization of production function	1
1.5	Recent trends in operation and production management,	2
1.6	Production as an organizational function	1
1.7	Decision making in production operation research.	1
1.8	Functions of production management, Relationship between production and other functions	1
2.0	**Production and Operation Systems**	
2.1	Production systems - principles and models	1
2.2	CAD and CAM	1
2.3	Automation in production, functions and significance,	2
2.4	Capacity and facility planning, Importance of capacity planning	2
2.5	Capacity measurement	1
2.6	Capacity Requirement Planning (CRP) process for manufacturing and service industry.	2
3.0	**Production and Operation Planning**	
3.1	Facility planning, Location of facilities, location flexibility	1
3.2	Facility design process and techniques,	1
3.3	Location break even analysis	1
3.4	Production process planning, steps for production process	2
3.5	Characteristics of production process systems,	1
3.6	Production planning control – functions	1
3.7	Planning phases, Action phase and Control phase	1
3.8	Aggregate production planning.	1
4.0	**Production and Operation Management Process**	
4.1	Process selection with PLC phases, process simulation tools	1
4.2	Work study – significance, methods, evolution of normal/standard time,	2
4.3	Job design and rating, Value analysis	1
4.4	Plant layout – meaning, characters, plant location techniques, types	1
4.5	MRP and layout design	1
4.6	Optimization and Theory of Constraints (TOC), Critical Chain Project Management (CCPM), Relationship (REL) chart,	2
4.7	Assembly line balancing, Plant design optimization, Forecasting methods.	1
4.8	Process selection with PLC phases, process simulation tools	1
4.9	Work study – significance, methods, evolution of normal/standard time,	2
5.0	**Controlling Production and Operation Management**	
5.1	Material Requirement Planning (MRP), concept, process and control,	1
5.2	Inventory control systems and techniques, JIT and Lean manufacturing,	2
5.3	Quality management – Preventive Vs Breakdown maintenance for quality	1
5.4	Techniques for measuring quality - Control chart (X, R, p, np and C charts)	2
5.5	Continuous improvement (Kaizen), Quality awards, supply chain management, total quality management	2
5.6	Six sigma approach and Zero Defective Manufacturing.	1

Course Designer(s)

1. A.S. Subburaayasaran -subburaayasaran@ksrct.ac.in

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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Head of the Department
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TIRUCHENGODE-637 215

60 TT E 37	Advances in Pattern Making and Grading	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To impart knowledge on human body measurements and creating pattern from the measurements.
- To develop commercial pattern with design aspect by manipulating the basic pattern.
- To fabricate patterns of different sizes by grading the basic pattern

Pre-requisites

- **Garment Manufacturing Technology II**

Course Outcomes

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

CO1	Gain knowledge on anthropometry	Understand
CO2	Acquire the skills for basic pattern making	Apply
CO3	Learn about various types of sleeves and colours	Understand
CO4	Gain knowledge on the types of yokes and pockets	Understand
CO5	Understand the basics of grading technology	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	-	-	-	-	2	2	-	-	-	-	2
CO2	3	2	-	-	-	-	-	-			-	-	-	-	2
CO3	3	2	-	-	-	-	-	-	2	2	-	-	-	-	2
CO4	3	2	-	-	-	-	-	-			-	-	-	-	2
CO5	3	2	-	-	-	-	-	-	2	2	-	2	-	-	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. - Textile Technology								
60 TT E 37 - Advances in Pattern Making and Grading								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VI	3	0	0	45	3	40	60	100

INTRODUCTION TO PATTERN MAKING: Anthropometry measurements, Human Anatomy, Clothing sizing systems, Body Ideals - Eight Head theory: Body proportions, Height and weight distribution. Pattern making tools, Types of paper pattern, Pattern making methods Pattern details. Measuring techniques - measuring the form-circumference, vertical and horizontal measurements.	[9]
BASIC PATTERN AND MANIPULATION: Drafting Bodice Blocks, Torso Blocks - Skirt Blocks. Fit- importance, standards, Evaluating fit-Bust, neckline, shoulder, armscye, collar, sleeve. Flat Pattern Techniques: Dart manipulation - slash and spread and pivotal transfer methods. Displacement of bust dart - waist line, side seam, arm hole, neck line, front edge. Creating Fullness using - tuck darts, pleats, flares, gathers, style lines.	[9]
BODY COMPONENTS: SLEEVE, COLLAR, CUFF: Sleeve: Set-in-Sleeves (plain, puff, bell, bishop, circular), Raglan, Sleeves combined with bodice (Modified armholes, Kimono, Dolman). Cuff: shirt cuff, self-faced cuff, French cuff, contoured cuff. Collars: Classification, Factors to be considered while selecting Collars. Types - peter pan, partial roll, cape, scalloped, sailor, square, full roll convertible, shawl, Shakespeare.	[9]
BODY COMPONENTS: YOKE, POCKET: Yokes: Factors to be considered while selecting Yoke, preparing patterns for yokes - partial yoke, yoke without fullness, yoke with fullness, yoke supporting or releasing fullness. Pockets: Factors to be considered while selecting Pocket. Types - patch, bound, welt, side seam, front hip.	[9]
PATTERN GRADING: Grading- definition, principles, types, grading points, & importance ofmanual and computerized grading and softwares used for grading: Marker planning and marker making	[9]
Total Hours:	**45**

Text Book(s):	
1.	Helen Joseph Armstrong, Pattern Making for Fashion Designers 5th Edition, Prentice-Hall, NewJersey, 2010.
2.	Fan J, Yu W, and Hunter L., Clothing Appearance and Fit: Science and Technology, Wood head Publishing Limited, 2004
Reference(s):	
1.	Ashdown S. P., Sizing in Clothing, Wood head Publishing Limited, 2007
2.	Winifred Aldrich, Pattern Cutting for Menswear, 4th edition, Blackwell Science Publisher, USA, 2006.
3.	Mary Mathew, Practical Clothing Construction, Part-II, Designing Drafting and Tailoring, Cosmic Press, Chennai, 1999
	Ashdown S. P., Sizing in Clothing, Wood head Publishing Limited, 2007

*SDG 9 – Industry Innovation and Infrastructure

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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.	Topics	No. of hours
1.0	**Introduction to Pattern Making**	
1.1	Anthropometry measurements and human anatomy	1
1.2	Clothing sizing systems and body ideals	2
1.3	Eight Head theory: body proportions	1
1.4	Overview of pattern making tools and methods	2
1.5	Types of paper patterns and pattern details	2
1.6	Measuring techniques and practical application	1
2.0	**Basic Pattern and Manipulation**	
2.1	Drafting bodice, torso, and skirt blocks	2
2.2	Evaluating fit and importance of standards	2
2.3	Dart manipulation techniques	1
2.4	Displacement of bust dart	1
2.5	Creating fullness through various methods	2
2.6	Integration of style lines in design	1
3.0	**Body Components: Sleeve, Collar, Cuff**	
3.1	Types and modifications of sleeves	1
3.2	Cuff types and design techniques	1
3.3	Collar classification and selection factors	1
3.4	Detailed design of specific collar types	2
3.5	Practical collar drafting and fitting	2
3.6	Review of integration with overall garment design	2
4.0	**Body Components: Yoke, Pocket**	
4.1	Yoke selection factors and pattern preparation	2
4.2	Types of yokes and their design aspects	1
4.3	Pocket selection factors and types	1
4.4	Detailed design and drafting of pockets	2
4.5	Integrating pockets and yokes into garments	2
4.6	Practical application and troubleshooting	1
5.0	**Pattern Grading**	
5.1	Fundamentals of grading: definition and principles	2
5.2	Grading points and their importance	1
5.3	Manual and computerized grading techniques	2
5.4	Overview of software used in pattern grading	2
5.5	Marker planning and making	1
5.6	Application of grading in commercial pattern-making	1

Course Designer(s)

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

Passed in BoS Meeting held on 21/11/2023
Approved in Academic Council Meeting held on 23/12/2023

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 2023-2024)

SEMESTER VII

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1.	60 TT 701	Garment Manufacturing Technology II	PC	3	3	0	0	3
2.	60 TT 702	Financial Strategies in Textile and Apparel Industry	PC	5	3	1	0	4
3.	60 TT 703	Nonwoven Technology	PC	4	2	0	2	3
4.	60 TT E4*	Professional Elective IV	PE	3	3	0	0	3
5.	60 TT E5*	Professional Elective V	PE	3	3	0	0	3
6.	60 AC 001	Research Skill Development	AC	1	1	0	0	0
7.	60 AB 00*	NCC/NSS/NSO/YRC/RRC/Fine Arts*	AB	3	2	0	2	3*
PRACTICALS								
8.	60 TT 7P1	Textile CAD Laboratory	PC	4	0	0	4	2
9.	60 TT 7P2	Garment Construction Laboratory II	PC	4	0	0	4	2
10.	60 TT 7P3	Project Work Phase I	CG	4	0	0	4	2
11.	60 CG 0P6	Internship	CG	0	0	0	0	1/2/3*
				34	**17**	**1**	**16**	**22**

Internship* additional credits is offered based on the duration

Passed in BoS Meeting held on 21/05/2024
Approved in Academic Council Meeting held on 25/05/2024

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)

B.E. / B.Tech. Degree Programme

SCHEME OF EXAMINATIONS
(For the candidates admitted in 2023-2024)

SEVENTH SEMESTER

S. No.	Course Code	Name of the Course	Duration of Internal Exam	Weightage of Marks			Minimum Marks for Pass in End Semester Exam	
				Continuous Assessment *	End Semester Exam **	Max. Marks	End Semester Exam	Total
THEORY								
1.	60 TT 701	Garment Manufacturing Technology II	2	40	60	100	45	100
2.	60 TT 702	Financial Strategies in Textile and Apparel Industry	2	40	60	100	45	100
3.	60 TT 703	Nonwoven Technology	2	50	50	100	45	100
4.	60 TT E4*	Professional Elective IV	2	40	60	100	45	100
5.	60 TT E5*	Professional Elective V	2	40	60	100	45	100
6.	60 AC 001	Research Skill Development	2	100	-	100	-	100
7.	60 AB 00*	NCC/ NSS/ NSO/ YRC/ RRC/ Fine Arts*	2	50	50	100	45	100
PRACTICAL								
8.	60 TT 7P1	Textile CAD Laboratory	3	60	40	100	45	100
9.	60 TT 7P2	Garment Construction Laboratory II	3	60	40	100	45	100
10.	60 TT 7P3	Project Work Phase I	3	100	-	100	-	100
11.	60 CG 0P6	Internship	3	100	-	100	-	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, 50 marks for theory cum practical End Semester Examination and 40 marks for practical End semester Examination.

Passed in BoS Meeting held on 21/05/2024
Approved in Academic Council Meeting held on 25/05/2024

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

60 TT 701	Garment Manufacturing Technology II	Category	L	T	P	Credit
		PC	3	0	0	3

Objectives

- Understand the dynamics of the apparel industry including product life cycles, quality, and pricing strategies
- Gain knowledge of apparel production systems and plant layout designs for efficiency
- Master the use of advanced sewing tools and techniques for garment construction
- Learn the application and function of garment accessories and modern pressing techniques
- Develop strategic planning and machinery selection skills tailored for garment manufacturing

Pre-requisites

- **Garment Manufacturing Technology I**

Course Outcomes

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

CO1	Analyse and interpret the structure and operations of the apparel industry.	Analyse
CO2	Design and implement efficient apparel production systems.	Apply
CO3	Demonstrate proficiency in using sewing tools and addressing garment construction challenges.	Apply
CO4	Apply finishing techniques and accessories to enhance garment quality.	Apply
CO5	Make informed decisions on machinery selection for optimized garment production.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	-	-	-	-	-	-	-	-	-	-	2	-	2
CO2	3	3	-	-	-	-	-	-	-	-	-	-	2	-	2
CO3	3	3	-	-	-	-	-	-	-	-	-	-	2	-	2
CO4	3	3	-	-	-	-	-	-	-	-	-	-	2	-	2
CO5	3	3	-	-	-	-	-	-	-	-	-	-	2	-	2

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

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

Passed in BoS Meeting held on 21/05/2024
Approved in Academic Council Meeting held on 25/05/2024

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. - Textile Technology

60 TT 701 - Garment Manufacturing Technology II

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VII	3	0	0	45	3	40	60	100

Organization of the Apparel Business Objectives; Nature of apparel business-timing of product change, quality, price; structure of apparel industry –types of contractors, retailing, business concepts, apparel trade association; General information about textile & garment manufacturing industry in India.	[9]
Apparel Production Systems* Basic concepts- plant layout- product oriented layout- process oriented layout- progressing bundle system (PBS)- Unit production system (UPS)- Modular production system (MPS) – Flexible manufacturing – work flow – Balancing – Buffer.	[9]
Sewing Tools and Attachments* Garment Construction Tools: Folders and attachments, Basic Sewing Tools, Sewing Machine Attachments, Cutting Tools, Pressing Tools, Specialty Sewing Tools, Thread and Bobbin Accessories, Quilting Tools, Serger/Overlocker Attachments, Embroidery Tools and Attachments, Storage and Organization	[9]
Garment Accessories and Pressing* Fusing equipment's - working principles, types and its function. Support materials: Interlinings – functions of interlinings; linings – functions of linings; fasteners-purpose of fasteners; functions of zippers, buttons, button holes, snaps, hooks and eyes; function of elastics; types of embroidery; labels - styles and application methods. Pressing and Packing - Methods of pressing equipment and packing methods.	[9]
Planning and Selection of Machines* Introduction on CNC controlled Sewing Machine in garment manufacturing. Selection of machines & machinery specifications required for shirts, trousers, knit goods, made-ups, suit, ladies dress material. Analyse the planning, layout and logistics in garment manufacturing. Corporate social responsibility.	[9]
Total Hours:	**45**

Text Book(s):

1.	Carr.H.Latham. B., "The Technology of Clothing Manufacture", Blackwell Scientific Publications, 2008.
2.	Ruth.E. Glock and Grace I.Kunz, "Apparel manufacturing and sewn product analysis" 4th edition Prentice hall, 2005

Reference(s):

1.	Claire Shaeffer, "Sewing for Apparel Industry", Prentice Hall, 2000.
2.	Laing, Webster J "Stitches and Seams" Woodhead Publishing Ltd., 2008.
3.	Gerry Cooklin, "Introduction to Clothing Manufacture", Blackwell Science Ltd., 2005
4.	Ashdown s.p. " Sizing in clothing", Woodhead Publishing Ltd., 2007.

*SDG 9 – Industry Innovation and Infrastructure

Passed in BoS Meeting held on 21/05/2024
Approved in Academic Council Meeting held on 25/05/2024

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.	Topics	No. of hours
1.0	**Organization of the Apparel Business**	
1.1	Objectives and Nature of Apparel Business: Objectives, Nature (Timing of product changes, quality, pricing strategies).	1
1.2	Structure of the Apparel Industry: Types of contractors, Business concepts (Branding, market segmentation).	1
1.3	Types of Retailing: Retail structures (Brick-and-mortar, e-commerce), Retail formats (Specialty stores, discount stores).	1
1.4	Apparel Trade Associations: Global and Indian trade associations.	1
1.5	Textile Manufacturing in India: Overview of the Indian textile sector.	1
1.6	Garment Manufacturing in India: Major garment production hubs, key segments.	1
1.7	Current Issues in the Apparel Industry: Sustainable production, supply chain disruptions.	1
1.8	Global Apparel Market Analysis: Key global players, emerging markets.	1
1.9	Summary and Q&A: Summarize key learnings and address student queries.	
2.0	**Apparel Production Systems**	
2.1	Basic Concepts of Apparel Production Systems: Overview of production systems, plant layout.	1
2.2	Progressing Bundle System (PBS): Definition, process flow, advantages, and disadvantages.	1
2.3	Unit Production System (UPS): Definition, process flow, advantages, and disadvantages.	1
2.4	Modular Production System (MPS): Definition, process flow, advantages, and disadvantages.	1
2.5	Flexible Manufacturing: Definition and implementation, benefits and challenges.	1
2.6	Workflow, Balancing, and Buffer: Workflow, line balancing, buffer.	1
2.7	Plant Layout Planning: Factors affecting layout design, simulation exercises.	1
2.8	Balancing Practical Exercise: Group exercise, analysis of results.	1
2.9	Review and Q&A: Recap of key production systems, student questions.	1
3.0	**Sewing Tools and Attachments**	
3.1	Garment Construction Tools Overview: Folders and attachments, basic sewing tools.	1
3.2	Sewing Machine Attachments: Specialized attachments, applications, and usage.	1
3.3	Cutting Tools: Scissors, rotary cutters, pattern notcher.	1
3.4	Pressing Tools: Pressing irons, ironing boards, pressing cloths.	1
3.5	Specialty Sewing Tools: Thread and bobbin accessories, quilting tools.	1
3.6	Serger/Overlocker Attachments: Attachments and their specific uses.	1
3.7	Embroidery Tools and Attachments: Types of embroidery machines, tools.	1
3.8	Storage and Organization: Tool storage techniques, workflow organization.	1
3.9	Review and Practical Demonstration: Summary of key sewing tools, practical demonstration.	
4.0	**Garment Accessories and Pressing**	
4.1	Fusing Equipment and Principles: Types, working principles, and functions.	1
4.2	Support Materials: Interlinings, linings.	1
4.3	Fasteners and Their Functions: Zippers, buttons, snaps, hooks, and eyes.	1
4.4	Elastic and Embroidery Types: Elastic types, embroidery types.	1

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4.5	Labels and Application Methods: Styles and application methods.	1
4.6	Pressing and Packing Methods: Pressing equipment and principles, packing methods.	1
4.7	Practical Session - Pressing and Packing: Hands-on demonstration of pressing and packing.	1
4.8	Quality Standards and Inspection: Quality standards and inspection practices.	1
4.9	Review and Q&A: Recap of key garment accessories, student questions.	1
5.0	**Electric and Autonomous Vehicles**	
5.1	Introduction to CNC Sewing Machines: Basics of CNC machines and their applications.	1
5.2	Machine Selection and Specifications - Shirts: Types of machines required, machinery specifications.	1
5.3	Machine Selection and Specifications - Trousers: Types of machines required, machinery specifications.	1
5.4	Machine Selection and Specifications - Knit Goods: Types of machines required, machinery specifications.	1
5.5	Machine Selection and Specifications - Made-ups: Types of machines required, machinery specifications.	1
5.6	Machine Selection and Specifications - Suits: Types of machines required, machinery specifications.	1
5.7	Machine Selection and Specifications - Ladies Dress Material: Types of machines required, machinery specifications.	1
5.8	Plant Layout and Logistics: Key factors in layout planning, managing logistics.	1
5.9	Corporate Social Responsibility (CSR): Importance, ethical sourcing, sustainability.	1

Course Designer(s)

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

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60 TT 702	Financial Strategies in Textile and Apparel Industry	Category	L	T	P	Credit
		PC	3	1	0	4

Objectives

- To know the basic concepts of financial accounting and Practice the capital budgeting evaluationmethods.
- To provide an overview on the principles and concepts of working capital and Inventory management.
- To familiarize on the fundamental concepts of costing and costing systems followed in apparel industry.
- To gain knowledge on yarn and fabric cost calculation.
- To offer the students a broad overview on garment costing.

Pre-requisites

- Total Quality Management

Course Outcomes

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

CO1	Describe the concepts of Financial Management, capable of applying appropriate capital Budgeting techniques and calculate the different methods of depreciation.	Understand
CO2	Estimate working capital and inventory control techniques required for the textile industry	Apply
CO3	Summarize the basic concepts in costing and elements of costing and compute the Job order costingand contract costing for apparel industry.	Understand
CO4	Prepare, analyse and interpret the cost sheet for yarn and fabric production.	Apply
CO5	Outline the factors influence the cost of garments and able to arrive at a cost estimation for various garments	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	3	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	2	2	-	-	-	-	-	-	-	-	-	-	-	1	-
CO3	2	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO4	2	2	-	-	-	-	-	-	-	-	-	-	-	-	1
CO5	2	2	-	-	-	-	-	-	-	-	-	-	1	2	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

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

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 TT 702 - Financial Strategies in Textile and Apparel Industry

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VII	3	1	0	60	4	40	60	100

Introduction and Capital Budgeting Objectives and functions of financial management. Capital budgeting – Nature & Principles – Evaluation of capital expenditure decisions – DCF and Non-DCF Techniques ; Depreciation – method of computing depreciation	[9+3]
Working Capital and Inventory Management* Capital structure - Capital structure theories and cost of capital - Computing specific costs of capital – Cost of debt, Preference shares, Equity and Retained earnings; Working capital; Definition, Principles and Types of working capital – Gross and Net working capital. Sources of Finance. Inventory- Inventory control techniques - Economic order quantity, ABC analysis.	[9+3]
Cost Accounting* Cost accounting, purpose – utility of costing – Methods and Techniques of Costing - Job, Batch and contract costing process costing: joint and by product costing in apparel manufacturing - Elements of cost - Material cost, labour cost and expenses	[9+3]
Costing in Fabric Preparation* Yarn Conversion cost, Selling price of various wastes. Calculation of Yarn requirements for weaving - Conversion cost from winding to weaving, Knitting Cost - Raw material requirements for knitting, Cost of knitted fabric. Processing Cost - Estimating of cost for Bleaching, Dyeing Printing and Finishing of fabric.	[9+3]
Garment Costing Costing of garments; factors that determine the price of garments. Calculation of cutting, making and trim costs. Calculation of garment weight of different sizes and style. Accessories Costing, Costing calculation for various testing. Calculation of HOK and OHS.	[9+3]
Total Hours: 45 + 15 (Tutorial)	**60**

Text Book(s):

1.	Pandey. I.M.,"Financial Management", Vikas Publishing House Pvt. Ltd., New Delhi, 10thEdition, 2012, ISBN: 8125937145 / ISBN: 9788125937142.
2.	Varma H K ,"Costing in Textile Industry", Dhanpat Rai publications, New Delhi
3	Dr. Ashish K. Bhattacharyya, "Principles and Pracitice of Cost Accounting", New Delhi Prentice Hall (PHI), 2012

Reference(s):

1.	Hrishikes Bhattacharya., "Working Capital Management, Strategies and Techniques", Prentice Hall of India Pvt. Ltd., New Delhi, 2014, ISBN: 8120349040 | ISBN-13: 9788120349049.
2.	Khan, M.Y. & Jain, P.K., "Cost Accounting (3rd ed.)", Tata McGraw Hill Pub., Co., Ltd, 2014
3.	Bhave P V and Srinivasan V, "Cost accounting in textile mills" ,ATIRA monograph, Ahmedabad, India
4.	Johnson Maurice, E. Moore, "Apparel Product Development", Om Book Service, 2001.

*SDG8 Decent Work and Economic Growth

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Introduction and Capital Budgeting**	
1.1	Objectives and functions of financial management	1
1.2	Capital budgeting – Nature & Principles	1
1.3	Evaluation of capital expenditure decisions	1
1.4	Evaluation of capital expenditure - DCF Techniques	2
1.5	Evaluation of capital expenditure - Non-DCF Techniques	2
1.6	Depreciation – method of computing depreciation	2
1.7	Tutorial	3
2.0	**Working Capital and Inventory Management**	
2.1	Capital structure - Capital structure theories and cost of capital	1
2.2	Computing specific costs of capital – Cost of debt, Preference shares	1
2.3	Computing specific costs of capital - Equity and Retained earnings	1
2.4	Working capital – Definition and Principles	1
2.5	Types of working capital – Gross and Net working capital	2
2.6	Sources of Finance	1
2.7	Tutorial	3
3.0	**Cost Accounting**	
3.1	Cost accounting - purpose	1
3.2	Utility of costing	2
3.3	Methods and Techniques of Costing	1
3.4	Job, Batch and contract costing	2
3.5	Process costing	1
3.6	Joint and by-product costing in apparel manufacturing	2
3.7	Tutorial	3
4.0	**Costing in Fabric Preparation**	
4.1	Yarn Conversion cost, Selling price of various wastes	1
4.2	Calculation of Yarn requirements for weaving - Conversion cost from winding to weaving.	2
4.3	Knitting Cost - Raw material requirements for knitting	1
4.4	Cost of knitted fabric	1
4.5	Processing Cost - Estimating of cost for Bleaching and Dyeing,	2
4.6	Processing Cost - Estimating of cost for Printing and Finishing of fabric.	2
4.7	Tutorial	3
5.0	**Garment Costing**	
5.1	Costing of garments - factors that determine the price of garments	1
5.2	Calculation of cutting, making and trim costs (CMT cost)	2
5.3	Calculation of garment weight of different sizes and style	2
5.4	Accessories Costing	1
5.5	Costing calculation for various testing	1
5.6	Calculation of HOK and OHS	2
5.7	Tutorial	3

Course Designer(s)

1. A.S. Subburaayasaran - subburaayasaran@ksrct.ac.in

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60 TT 703	Nonwoven Technology	Category	L	T	P	Credit
		PC	2	0	2	3

Objectives

- To Teach students the basics of nonwoven fabrics, including what they are and how they're categorized.
- To Educate students on the materials used in nonwovens and how they're processed.
- To Develop students' skills in creating nonwoven fabrics using different methods.
- To Teach students various ways to bonding of nonwoven materials.
- To Show students how to test nonwovens and explain their uses in different industries

Pre-requisites

- Nil

Course Outcomes

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

CO1	Recognize nonwoven fabrics, their types, and features.	Understand
CO2	Skilled in making nonwoven fabrics using several techniques.	Apply
CO3	Know how to bond nonwoven materials together.	Analyse
CO4	Know how the production of nonwoven materials	Analyse
CO5	Finishing and testing of nonwoven fabrics.	Apply

Mapping with Programme Outcomes

COs	Pos												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	-	-	-	-	1	-	-	-	-	-	-	3	-	-
CO2	3	-	2	-	-	-	-	-	-	-	-	-	-	3	-
CO3	-	-	3	-	2	-	-	-	-	-	-	-	2	-	-
CO4	-	-	-	3	2	-	-	-	-	-	-	-	-	2	-
CO5	-	-	-	-	-	-	-	-	-	2	-	3	-	-	1

3 - Strong; 2 - Medium; 1 – Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)				Model Examination (Marks)	End Sem Examination (Marks)	
	Test 1		Test 2				
	Theory	Lab	Theory	Lab	Lab	Theory	Lab
Remember	20	-	20	-	-	34	-
Understand	20	-	10	-	-	66	-
Apply	20	50	20	50	50	-	50
Analyse	-	50	10	50	50	-	50
Evaluate	-	-	-	-	-	-	-
Create	-	-	-	-	-	-	-
Total	60	100	60	100	100	100	100

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech – Textile Technology

60 TT 703 - Nonwoven Technology

Semester	Hours / Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VII	2	0	2	60	3	50	50	100

Nonwoven Essentials* Definitions and classification of nonwoven fabrics; raw materials used for making nonwovens and their characteristics; stabilizers, binder fluids, binder fibres-adhesive fibres (soluble and hot melt) and their characteristics.	[6]
Web Forming** Principles and fundamentals of web preparation - methods of making the web; various air laid principles; wet laid principles – methods of binder addition and methods of drying nonwoven batt; polymer – extension based technigues – spun bound and meltblown synthetic production Techniques; Non-woven layering-SMS and MSM, applications.	[6]
Bonding*** Mechanical bonding techniques: working principle of needle punching machine, surface structuring and working principles Hydro entanglement process - Principles of thermal bonding, Calender bonding process, Through-air bonding process, Infra-red bonding process, Ultrasonic bonding process. Chemical binders ,Spray bonding process, Print bonding process, Drying Methods in Bonding- Drying	[6]
Spunbond, Meltblown technology & Finishing Process ** Raw materials, process sequence, machine elements, commercial systems, key process factors of spun bonding - raw materials, Process sequence, machine elements, commercial systems, key process factors meltblown technology: mechanical finishes, chemical finishes and Methods of applying finishes	[6]
Non Woven Testing Tensile test, puncture resistance , non woven thickness, air permeability, bursting compression, hydrohead, UPF, impedance tube thermal conductivity, bacterial filtration test, porosity test, free formaldehyde, capillary flow porometer, wetting analysis, flammability test.	[6]
Practical: 1. Identification of different non woven structure 2. Characterisation of webs meant for natural nonwoven matts 3. Characterisation of webs meant for synthetic nonwoven matts 4. Preparation of needle punched samples 5. Preparation of chemical bonded nonwovens 6. Analyse the tensile behaviour of Nonwoven Matts 7. Analyse the porosit test of meltblown nonwoven 8. Analyse the porosit test of spun bonded nonwoven 9. Analyse the porosit test of needle punched nonwoven 10. Antimicrobial test analysis of face masks	[30]
Total Hours: (Lecture - 30; Practical - 30)	**60**

Text Book(s):

1.	S.J. Russell, Handbook of Nonwovens (Second Edition),Woodhead Publishing,2022,In The Textile Institute Book Series, ISBN 9780128189122,https://doi.org/10.1016/B978-0-12-818912-2.10000-X.
2.	Subhash K. Batra, Behnam Pourdeyhimi, Introduction to Nonwovens Technology, ISBN: 978-1-60595-037-2, ©2012

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Reference(s):	
1.	Aniket Bhute, “Handbook of Nonwovens”, 1st Edition, DKTE Centre of Excellence In Nonwovens & (ITTA) Indian Technical Textiles Association, January 2015.
2.	T. Karthik, Prabhakaran C.,R. Rathinamoorthy, “Nonwovens: Process, Structure, Properties and Applications”, WPI Publisher, 2017.
3.	Albrecht Wilhelm, “Non-woven fabrics: Raw material, Manufacture, Applications”. Wiley VCH, 2008. https://www.inda.org/about-nonwovens/nonwovens-glossary-of-terms/
4.	Purdy.A.T., “Developments in Non-woven fabrics”, Textile progress, vol.12, No.47, Textile Institute 1983
*SDG 3 – Good Health and Well Being **SDG 9 – Industry Innovation and Infrastructure	

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Course Contents and Lecture Schedule

S. No.	Topics	No. of Hours
1	**Nonwoven Essentials**	
1.1	Overview of nonwoven tech	1
1.2	Definitions	1
1.3	Classification of nonwovens	1
1.4	Fibre Geometry	1
1.5	Structure of Fibrous Webs	1
1.6	Fibres for Nonwovens	1
2	**Web Formation**	
2.1	Overview of Web Formation	1
2.2	Carding Process	1
2.3	Parallel-lay Process & Cross-lay Process	1
2.4	Perpendicular-lay Process & Air-lay Process	1
2.5	Wet-lay Process	1
2.6	Web Quality Factors	1
3	3. Bonding	
3.1	Overview of Bonding	1
3.2	Needle-punch Process	1
3.3	Hydroentanglement Process & Thermal Bonding Principles	1
3.4	Calender Bonding Process & Through-air Bonding	1
3.5	Infra-red Bonding Process	1
3.6	Ultrasonic Bonding Process	1
4	**Technology & Finishing Process**	
4.1	Spunbond Technology	1
4.2	Meltblown Technology	1
4.3	Spunbond Process Sequence	1
4.4	Mechanical Finishes	1
4.5	Chemical Finishes	1
4.6	Finishing Techniques	1
5	**Testing**	
5.1	Overview of Testing	1
5.2	CBR Cone Puncture Test	1
5.3	Liquid Strike-through Test	1
5.4	Bacterial Filtration Test	1
5.5	Abrasion Test	1
5.6	Demand Absorbency Test	1
Practical:		
1.	Identification of different non woven structure	2
2.	Characterisation of webs meant for natural nonwoven matts	2
3.	Characterisation of webs meant for synthetic nonwoven matts	4
4.	Preparation of needle punched samples	4
5.	Preparation of chemical bonded nonwovens	2
6.	Analyse the tensile behaviour of Nonwoven Matts	4
7.	Analyse the porosit test of meltblown nonwoven	4
8.	Analyse the porosit test of spun bonded nonwoven	4
9.	Analyse the porosit test of needle punched nonwoven	2
10.	Antimicrobial test analysis of face masks	2

Course Designer(s)

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

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60 AC 001	Research Skill Development	Category	L	T	P	Credit
		AC	1	0	0	0

Objectives

- To identify research problems, formulate hypotheses, collect data and test hypotheses
- To prepare and submit quality manuscripts and understand peer review process
- To utilize software tools for effective manuscript preparation and visualization of research data
- To familiarize different journal metrics and author-level quality indicators
- To protect creative works, inventions, and branding elements using IPR

Pre-requisites

- Nil

Course Outcomes

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

CO1	Develop structured scientific approach to plan and execute research work	Apply
CO2	Comply with the journal requirements to publish research findings effectively	Understand
CO3	Apply various software tools during the manuscript preparation	Apply
CO4	Select suitable journals to publish the work using different publication metrics	Analyse
CO5	Apply the appropriate form of IP protection to a specific invention or creation	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2	2	2		2	2	3	3	3	-	3		-	-
CO2	-	-	-	-	-	-	-	3	3	3	-	3		-	-
CO3	-	-	-	-	3	-	-	3	3	3	-	3		-	-
CO4	-	-	-	-	-	-	-	3	3	-	-	3		-	-
CO5	-	-	2	2	-	-	-	3	3	3	-	3		-	-

3 - Strong; 2 - Medium; 1 – Some

Assessment Pattern

One review at end of the semester

Parameters	Weightage (Marks)
Research Problem Identification (Research gap, SDG, Objectives)	10
Literature Review preparation (Clarity, Number and quality of sources)	20
Patent Draft/ Manuscript Preparation (Structure, Content)	20
Use of software tools (Plagiarism, Reference Management, etc.,)	10
Journal Identification (Aim & scope of the journal, journal metrics)	10
Presentation & Viva voce	30
Total	**100**

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Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022							
60 AC 001 – Research Skill Development							
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**	
	L	T	P		C	CA	ES	Total
VII	1	0	0	15	0	100	-	100

Research - Scientific Approach* Types of Research - Identification and Clarification of the problem - Formulating hypothesis, Selection of sample and tools of data collection - Testing the hypothesis - Conclusion	[3]
Manuscript Preparation* Structure of a manuscript - Types of manuscript - Graphical abstract - Highlights - Literature Review - Citation - Reference style - Plagiarism – Journal selection - Peer review process	[3]
Research Toolkit* Software Tools for Writing enhancement - Literature review - Reference management - Data analysis and visualization - Drawing - Plagiarism	[3]
Research Publication Metrics* Journal Index: Scopus - Web of Science - SCI - UGC Care - Q Journal; Journal Metrics: Impact Factor, Cite Score; Quality Indicators: h-index - i-10 index - citations	[3]
Intellectual Property Rights* Patents - Industrial Designs - Copyright - Trademarks - Geographical Indications - Trade Secrets	[3]
Total Hours:	**15**

Reference(s):

1.	Kothari, C.R. and Gaurav Garg, “Research Methodology: Methods and Techniques”, New Age International Publishers, 2023
2.	Chawla H S., “Introduction to Intellectual Property Rights”, CBS Publishers and Distributors Private Limited, 2019

*SDG 9 – Industry Innovation and Infrastructure

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Course Contents and Lecture Schedule		
S. No.	**Topics**	**No. of hours**
1	**Research - Scientific Approach**	
1.1	Types of Research - Identification and Clarification of the problem - Formulating hypothesis	2
1.2	Selection of sample and tools of data collection - Testing the hypothesis - Conclusion	1
2	**Manuscript Preparation**	
2.1	Structure of a manuscript - Types of manuscript - Graphical abstract - Highlights	1
2.2	Literature Review	1
2.3	Citation - Reference style – Plagiarism, Journal selection - Peer review process	1
3	**Research Toolkit**	
3.1	Software Tools for Writing enhancement	1
3.2	Literature review, Reference management	1
3.3	Data analysis and visualization – Drawing, Plagiarism	1
4	**Research Publication Metrics**	
4.1	Journal Index: Scopus - Web of Science - SCI - UGC Care - Q Journal;	1
4.2	Journal Metrics: Impact Factor, Cite Score	1
4.3	Quality Indicators: h-index - i-10 index - citations	1
5	**Intellectual Property Rights**	
5.1	Patents	1
5.2	Industrial Designs - Copyright	1
5.3	Trademarks - Geographical Indications - Trade Secrets	1

Course Designer

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60 AB 001	National Cadet Corps – (AIR WING) - I	Catego	L	T	P	Credit
		H	2	0	2	3*

Objectives

- To designed especially for NCC Cadets
- To develop character, camaraderie, discipline, secular outlook
- To inculcate spirit of adventure, sportsman spirit
- To teach selfless service amongst cadets by working in teams
- To learning military subjects including weapon training and motivate them to join in

Pre-requisites

- Nil

Course Outcomes

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

CO1	Display sense of patriotism, secular values and shall be transformed into motivated youth who will carry out nation building through national unity and social cohesion	Understand
CO2	Demonstrate the sense of discipline with smartness and have basic knowledge of weapons and their use and handling	Understand
CO3	Illustrate various forces and moments acting on aircraft	Apply
CO4	Outline the concepts of aircraft engine and rocket propulsion	Apply
CO5	Design, build and fly chuck gliders/model airplanes and display static models	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	-	-	-	-		3	3	3	3	3	-	-	-	-	3
CO2	-	-	-	-	3	-	-	-	-	-	-	-	-	-	3
CO3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	3
CO4	3	2	-	-	-	-	-	-	-	-	-	-	-	-	3
CO5	3	2	-	-	-	-	-	-	-	-	-	-	-	-	3

3 - Strong; 2 - Medium; 1 - Some

Passed in BoS Meeting held on 21/05/2024
Approved in Academic Council Meeting held on 25/05/2024

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
60 AB 001 - National Cadet Corps – (AIR WING) - I								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	2	0	2	60	3	50	50	100

NCC Organization and National Integration NCC Organization – History of NCC- NCC Organization- NCC Training- NCC Uniform – Promotion of NCC cadets – Aim and advantages of NCC Training- NCC badges of Rank- Honors" and Awards – Incentives for NCC cadets by central and state govt. History and Organization of IAF- Indo-Pak War-1971- Operation Safed Sagar. National Integration- Unity in diversity- Contribution of youth in nation building- National integration council- Images and Slogans on National Integration.	[12]
Drill and Weapon Training Basic physical Training- Various exercises for fitness (with Demonstration)- Food- Hygiene and Cleanliness. Drill- Words of commands- Position and commands- Sizing and forming- Saluting- Marching- Turning on the march and wheeling- Saluting on the march- Side pace, Pace forward and to the rear- Marking time- Drill with arms- Ceremonial drill- Guard mounting. (WITH DEMONSTRATION)	[12]
Principles of Flight Laws of motion- Forces acting on aircraft- Bernoulli"s theorem- Stalling-Primary control surfaces- Secondary control surfaces- Aircraft recognition.	[12]
Aero Engines Introduction of Aero engine- Types of engine- Piston engine- Jet engines- Turboprop engines- Basic Flight Instruments- Modern trends.	
Aero Modeling History of Aero modeling- Materials used in Aero modeling- Types of Aero models – Static Models- Gliders-Control line models- Radio Control Models- Building and Flying of Aero models.	[12]
Total Hours:	60

Text Book(s):	
1.	"National Cadet Corps- A Concise handbook of NCC Cadets", Ramesh Publishing House, New Delhi, 2014.
Reference(s):	
1.	"Cadets Handbook – Common Subjects SD/SW", published by DG NCC, New Delhi.
2.	"Cadets Handbook- Specialized Subjects SD/SW", published by DG NCC, New Delhi.
3.	"NCC OTA Precise", published by DG NCC, New Delhi.

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

Course Designers

1. Flt Lt V.R. Sadasivam - sadasivam@ksrct.ac.in

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

60 AB 002	National Cadet Corps - Army Wing	Category	L	T	P	Credit
		HS	2	0	2	3

Objectives

- Develop character, camaraderie
- Inculcate discipline, secular outlook
- Enrich the spirit of adventure, sportsman spirit
- Ideals of selfless service amongst cadets by working in teams
- Improve qualities such as self-discipline, self-confidence, self-reliance and dignity of labour in the cadets.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Display sense of patriotism, secular values and shall be transformed into motivated youth who will carry out nation building through national unity and social cohesion.	Apply
CO2	Demonstrate Health Exercises, the sense of discipline, improve bearing, smartness, turn out, develop the quality of immediate and implicit obedience of orders.	Apply
CO3	Basic knowledge of weapons and their use and handling.	Understand
CO4	Aware about social evils and shall inculcate sense of whistle blowing against such evils and ways to eradicate such evils	Apply
CO5	Acquaint, expose & provide knowledge about Army/Navy/ Air force and to acquire information about expansion of Armed Forces, service subjects and important battles	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	-	-	-	-	-	1	-	3	-	-	-	-	-	-	3
CO2	-	-	-	-	-		-	2	-	-	-	-	-	-	3
CO3	-	-	-	-	-	1	-	3	-	-	-	-	-	-	3
CO4	-	-	-	-	-	-	-	2	-	-	-	-	-	-	3
CO5	-	-	-	-	-	-	-	3	-	-	-	-	-	-	3
3 - Strong; 2 - Medium; 1 - Some															

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech – Textile Technology

60 AB 002 – National Cadet Corps (Army Wing)

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VII	2	0	2	60	3	50	50	100

NCC Organization & National Integration NCC Organization – History of NCC- NCC Organization- NCC Training- NCC Uniform – Promotion of NCC cadets – Aim and advantages of NCC Training- NCC badges of Rank- Honors' and Awards – Incentives for NCC cadets by central and state govt. National Integration - Unity in diversity- contribution of youth in nation building- national integration council- Images and Slogans on National Integration	[9+3]
Basic Physical Training & Drill Basic physical Training – various exercises for fitness (with Demonstration)-Food – Hygiene and Cleanliness. Drill- Words of commands- position and commands- sizing and forming- saluting- marching- turning on the march and wheeling- saluting on the march- side pace, pace forward and to the rear- marking time- Drill with arms- ceremonial drill- guard mounting. (WITH DEMONSTRATION).	[9+3]
Weapon Training Main Parts of a Rifle- Characteristics of .303 rifle- Characteristics of .22 rifle- loading and unloading – position and holding safety precautions – range procedure- MPI and Elevation- Group and Snap shooting- Long/Short range firing(WITH PRACTICE SESSION) - Characteristics of 5.56mm rifle- Characteristics of 7.62mm SLR- LMG- carbine machine gun – pistol.	[9+3]
Social Awareness and Community Development Aims of Social service-Various Means and ways of social services- family planning – HIV and AIDS- Cancer its causes and preventive measures- NGO and their activities- Drug trafficking- Rural development programmes - MGNREGA-SGSYJGSY-NSAP-PMGSY- Terrorism and counter terrorism- Corruption – female foeticide -dowry –child abuse-RTI Act- RTE Act- Protection of children from sexual offences act- civic sense and responsibility	[9+3]
Specialized Subject (ARMY) Basic structure of Armed Forces- Military History – War heroes- battles of Indo-Pak war- Param Vir Chakra- Career in the Defence forces- Service tests and interviews.	[9+3]
Total Hours:	**60**

Text Book(s):	
1.	National Cadet Corps- A Concise handbook of NCC Cadets by Ramesh Publishing House, New Delhi, 2014
2.	Cadets Handbook- Specialized Subjects SD/SW published by DG NCC, New Delhi ,2014
Reference(s):	
1.	"Cadets Handbook – Common Subjects SD/SW" by DG NCC, New Delhi,2019
2.	"Cadets Handbook – Specialised Subjects SD/SW" by DG NCC, New Delhi,2017

Course Designer

1. CT E CHANDRA KUMAR - chandrakumar@ksrct.ac.in

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**NCC Organization & National Integration**	
1.1	NCC Organization	1
1.2	History of NCC and NCC Organization	1
1.3	NCC Training and NCC Uniform	1
1.4	Promotion of NCC cadet, Aim and advantages of NCC Training	1
1.5	NCC badges of Rank, Honors' and Awards, Incentives for NCC cadets by central and state govt	2
1.6	National Integration, Unity in diversity	1
1.7	Contribution of youth in nation building	1
1.8	National integration council	1
	Images and Slogans on National Integration	1
2.0	**Basic Physical Training & Drill**	
2.1	Basic physical Training – various exercises for fitness	2
2.2	Food – Hygiene and Cleanliness .	1
2.3	Drill- Words of commands- position and commands- sizing and forming	1
2.4	saluting- marching- turning on the march and wheeling-	1
2.5	saluting on the march- side pace, pace forward and to the rear- marking time	1
2.6	Drill with arms- ceremonial drill- guard mounting.(wit demonstration)	1
3.0	**Weapon Training Main Parts of a Rifle**	
3.1	Characteristics of .303 rifle	1
3.2	Characteristics of .22 rifle	1
3.3	Loading and unloading, position and holding safety precautions	1
3.4	Range procedure, MPI and Elevation-	1
3.5	Group and Snap shooting Long/Short range firing (WITH PRACTICE SESSION)	2
3.6	Characteristics of 5.56 mm rifle	1
3.7	Characteristics of 7.62mm	1
4.0	**Social Awareness and Community Development**	
4.1	Aims of Social service, Various Means and ways of social services	1
4.2	Family planning , HIV and AIDS	1
4.3	Cancer its causes and preventive measures	1
4.4	NGO and their activities, Drug trafficking	1
4.5	Rural development programmes	1
4.6	MGNREGA, SGSY, JGSY, NSAP, PMGSY	1
4.7	Terrorism and counter terrorism, Corruption	1
4.8	female foeticide, dowry, child abuse	1
4.9	RTI Act, RTE Act	1
4.10	Protection of children from sexual offences act	1
4.11	Civic sense and responsibility	1
5.0	**Specialized Subject (ARMY)**	
5.1	Basic structure of Armed Forces	1
5.2	Military History, War heroes	1
5.3	battles of Indo - Pak war , Param Vir Chakra,	3
5.5	Career in the Defence forces, Service tests and interviews.	3

Course Designer(s)

1. Mr.E.Chandra Kumar - chandrakumar@ksrct.ac.in

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

60 TT 7P1	Textile CAD Laboratory	Category	L	T	P	Credit
		PC	0	0	4	2

Objectives

- To impart training on usage of software in Textile designing.
- To know the application of drafting procedure through computer.
- To understand the industrial pattern drafting system and application.
- To know the pattern grading application through computer.
- To acquire knowledge in measuring the important parameter of colour difference

Pre-requisites

Garment Manufacturing Technology II

Course Outcomes

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

CO1	Practice to draw the design draft and peg plan for different weaves and it derivatives using win soft software and Demonstrate simulation of checked and striped fabric	Apply
CO2	Calculate the cost of different types of fabrics, Demonstrate simulation of jacquard and dobby designs.	Understand
CO3	Practice to draft the patterns for different garments and Demonstrate grading for different components of a garment	Understand
CO4	Execute marker planning for the patterns and Arrange the components on the lay	Understand
CO5	Calculate the efficiency of laying by placing the components effectively	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	-	2	-	3	-	-	-	-	-	-	-	3	-	-
CO2	2	-	2	-	3	-	-	-	-	-	-	-	3	-	-
CO3	2	-	2	-	3	-	-	-	-	-	-	-	3	-	-
CO4	2	-	2	-	3	-	-	-	-	-	-	-	3	-	-
CO5	2	-	2	-	3	-	-	-	-	-	-	-	3	-	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech– Textile Technology								
60 TT 7P1 – Textile CAD Laboratory								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	0	0	4	60	2	60	40	100

List of Experiments:

1. Design, draft and peg plan for plain weave and its derivatives, twill weave and its derivatives and sateen and satin weaves.
   Simulation of stripped and checked pattern on the above weaves. Costing of warp & weft yarn required for the above fabrics.
2. Design, draft and peg plan for twill weave and its derivatives and sateen and satin weaves.
   Simulation of stripped and checked pattern on the above weaves. Costing of warp & weft yarn required for the above fabrics.
3. Design, draft and peg plan for Honey comb, Huck a back, Terry and Bed ford cord weaves.
   Simulation of stripped and checked patterns on the above weaves. Costing of warp & weft yarn required for the above fabrics.
4. Design, draft and peg plan for any one dobby weaves and jacquard weaves.
   Simulation of stripped and checked patterns. Costing of warp & weft yarn required for the above fabrics.
5. Computer aided pattern making, grading and marker planning for the following garments.
   1. Half sleeve shirt
   2. Full sleeve shirt
   3. T-Shirt
6. Computer aided pattern making, grading and marker planning for the following garments.
   1. Romper
   2. Waist coat
7. Computer aided pattern making, grading and marker planning for the following garments.
   1. Skirt blouse
   2. Plain skirt
8. Computer aided pattern making, grading and marker planning for the following garments.
   1. Pleated trousers
   2. Jeans pant
9. Computer aided pattern making, grading and marker planning for industry wear
   1. Surgeons coat,
   2. Industry work wear jackets
   3. Bullet proof vest
10. Mini Project

Lab Manual	
1.	"Textile CAD/CAM Lab Manual", Department of Textile Technology, KSRCT.

*SDG 9 – Industry Innovation and Infrastructure

Course Designer(s)

1. Dr.N.Sukumar – sukumar@ksrct.ac.in

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

60 TT 7P2	Garment Construction Laboratory II	Category	L	T	P	Credit
		PC	0	0	4	2

Objectives

- Equip students with advanced pattern making techniques for a diverse range of garments.
- Develop skills in high-quality garment construction, from casual to formal wear.
- Foster creativity and innovation in designing varied apparel, including both men's and women's clothing.
- Provide specialized knowledge in constructing complex garments with detailed craftsmanship.
- Teach quality control and finishing techniques to ensure market-ready apparel production

Pre-requisites

- **Garment Construction Laboratory I**

Course Outcomes

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

CO1	Accurately draft patterns for a wide array of garments, reflecting current trends and styles.	Understand
CO2	Construct various types of garments with precision, quality, and technical proficiency.	Analyse
CO3	Design and execute patterns for a diverse clothing range, showcasing versatility and creativity.	Apply
CO4	Innovate in the construction of specialized garments, demonstrating advanced sewing and problem-solving skills.	Analyse
CO5	Apply finishing techniques to produce garments that meet industry standards and consumer expectations.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	2	-	-	-	-	-	-	-	-	2	2	3	-
CO2	3	2	2	-	-	-	-	-	-	-	-	2	2	3	-
CO3	3	2	3	-	-	-	-	-	-	-	-	2	2	3	-
CO4	3	2	3	-	-	-	-	-	-	-	-	2	2	3	-
CO5	3	2	3	-	-	-	-	-	-	-	-	2	2	3	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Lab Experiments Assessment (Marks)		Model Examination (Marks)	End Sem Examination (Marks)	
	Lab	Activity			
Remember	-	-	-	-	-
Understand	10	-	-	-	-
Apply	20	12	50	-	50
Analyse	20	13	50	-	50
Evaluate	-	-	-	-	-
Create	-	-	-	-	-
Total	50	25	100	-	100

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

K.S.Rangasamy College of Technology – Autonomous R2022								
B. Tech. - Textile Technology								
60 TT 7P2 - Garment Construction Laboratory II								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	0	0	4	60	2	60	40	100

List of Experiments:

1. Pattern making and Construction of men's full sleeve shirt
2. Pattern making and Construction of men's formal trousers
3. Pattern making and construction of men's Bermudas*
4. Pattern making and construction of ladies' tops
5. Pattern making and construction of ladies' skirts
6. Pattern making and construction of salwar kameez
7. Pattern making and construction of leggings*
8. Pattern making and construction of ladies' night wears
9. Pattern making and construction of T-Tops*
10. Pattern making and construction of Pedal Pushers*

Design Experiments:

1. Design and develop a pattern and construct a Waist Coat for Ladies
2. Design a Coat with Raglan sleeve and shawl collar with a usage of standard measurements

Lab Manual	
1.	Garment Construction Laboratory II Manual, Department of Textile Technology, KSRCT

*SDG 9 – Industry Innovation and Infrastructure

Course Designer(s)

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

60 TT 7P3	PROJECT WORK PHASE I	Category	L	T	P	Credit
		CG	0	0	4	2

Objectives

- To make the student understand the practical problem solving process in the industry

Pre-requisites

- Nil

Course Outcomes

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

CO1	Identify engineering problems relevant to the domain and collect literature survey for its support	Analyse
CO2	Analyse and identify an appropriate technique to solve the problem	Analyse
CO3	Experimentation / fabrication, collect and interpret the data obtained	Apply
CO4	Document, prepare the project report and do the presentation	Apply
CO5	Demonstrate their responsibility as an individual and a leader in group project work	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	2	3	2	-	-	2	2	2	-	-	3	2	1
CO2	3	3	2	3	2	-	-	2	2	2	-	-	3	2	1
CO3	3	3	2	3	2	-	-	2	2	2	-	-	3	2	1
CO4	3	3	2	3	2	-	-	2	2	2	-	-	3	2	1
CO5	3	3	2	3	2	-	-	2	2	2	-	-	3	2	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Review I (R1)			Review II (R2)		Review III (R3)			Total (R1+ R2+R3)	Internal
(Internal Assessment: 100 Marks)									
Literature Survey	Topic Identification & Justification	Work Plan	Approach	**Conclusion**	**Demo- Existing System**	Presentation	Report		**100**
10	10	10	20	**20**	**10**	10	10	**100**	

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. Textile Technology								
60 TT 7P3 – PROJECT WORK PHASE I								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	0	0	4	60	2	100	-	100

Each student has to do a project work from any industrial related problems or innovations in technology or critical studies related to textiles (As decided during their VIth semester). The student can undertake the project work individually or in a group not exceeding three students. The works to be undertaken during this phase I is given below:

I. Complete 20% of project work and present their findings in Review I
II. Complete 60% of project work and present their findings in Review II
III. Complete 70% of project work and present their findings in Review III
IV. Complete 100% of project work before the commencement of VIIIth semester

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

Course Designer(s)

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

60 CG 0P6	Internship	Category	L	T	P	Credit
		CG	-	-	-	1/2/3*

Objectives

- To give practical industrial exposure to the students on the day-to-day working of textile industries.

Pre-requisites

- Nil

Course Outcomes

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

CO1	Demonstrate the working of the factory	Apply
CO2	Categorize the machines, products and work force	Apply
CO3	Compare the performance of machines, quality and description of products and efficiency of work force.	Apply
CO4	Compile the data on machine, material men and relevant parameters	Analyse
CO5	Discuss the working of machines, product quality, general mill particulars and	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	-	-	-	-	-	3	-	-	3	2	-
CO2	3	2	-	-	2	-	-	-	-	2	3	-	3	2	-
CO3	3	2	2	2	2	2	-	-	-	2	3	-	3	2	-
CO4	3	2	2	3	2	2	-	-	-	2	3	-	3	2	-
CO5	3	-	3	2	2	2	-	-	-	2	-	-	3	3	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Final Review Examination (Marks)
Remember	-
Understand	-
Apply	50
Analyse	50
Evaluate	-
Create	-
Total	100

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 CG 0P6 - Internship								
Semester	**Hours/Week**			**Total Hrs**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	-	-	-	-	1/2/3*	100	0	100

Each student has to compulsorily undergo an Internship in any one of the textile industry for a minimum period of 4/8 weeks. This has to be carried out after completion of each semester examination and before commencement of the next semester classes.

Each student has to follow the below mentioned guidelines:

1. Drawing the layout plan of building and machineries of the selected.
2. Listing out the Organization chart.
3. Noting down the number of machineries of each type and its technical details-Motor HP, Motor rpm, Production capacity of the machine.
4. Making the production process flow chart.
5. Noting down the existing production details for all products.
6. Noting down the maintenance schedule.
7. Learning regarding inventory and despatch sections.
8. Noting down the allocation of man power for different processes.
9. After completion of training programme a report has to be prepared.
10. The report has to be signed by the Internship Coordinator / HoD.

*** Extra credits will be offered as additional credits depending on the duration of the internship**

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

Course Designer(s)

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

60 TT E 41	Surface Characteristics of Fibres	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- Understand the types and surface properties of various fibers.
- Master analytical techniques for fiber surface characterization, such as SEM, AFM, and XPS.
- Analyse how fiber surface properties impact functionality.
- Learn and apply methods to modify fiber surfaces for enhanced properties.
- Explore the sustainable application of surface-characterized fibers in multiple industries.

Pre-requisites

- Fibre Science

Course Outcomes

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

CO1	Differentiate and describe fiber types based on their surface properties.	Analyse
CO2	Skillfully use analytical tools to evaluate fiber surfaces.	Analyse
CO3	Link surface properties with fiber performance in applications.	Apply
CO4	Design and implement fiber surface treatments for specific uses.	Analyse
CO5	Incorporate sustainability into fiber technology projects	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	-	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	3	-	-	-	-	-	-	-	-	-	-	3	1	-
CO3	3	3	-	-	-	-	-	-	-	-	-	-	2	2	-
CO4	3	3	-	-	-	-	-	-	-	-	-	-	2	2	-
CO5	3	3	-	-	-	-	-	-	-	-	-	-	3	1	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 TT E 41 - Surface Characteristics of Fibres								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	3	0	0	45	3	40	60	100

Fundamentals of Fiber Surfaces Introduction to fiber types - Natural vs. Synthetic-Basic properties of fibers - Mechanical, thermal, and chemical aspects-The molecular structure of fibers and its impact on surface properties-Overview of surface properties - roughness, porosity, and functionality-Importance of surface characteristics in fiber performance	[9]
Surface Analysis Techniques Introduction to microscopy – principles of SEM and TEM- Atomic Force Microscopy (AFM) – setup and operation for fiber analysis-Spectroscopic methods for surface analysis - XPS, FTIR- Surface topography measurements and their interpretations-Practical aspects of conducting and analysing contact angle measurements	[9]
Surface Property Fundamentals Theories of surface energy and its implications for fiber adhesion-Wettability of fibers and its importance in textile processing-Chemical composition of fiber surfaces and its effect on dyeing and finishing-Mechanical interlocking and surface bonding in composite materials-Influence of environmental factors on fiber surface properties	[9]
Modifying Fiber Surfaces Chemical surface modification - Coating and grafting techniques-Physical methods - Plasma treatment, corona discharge methods-Enzymatic treatments and their benefits for natural fibers-Recent advances in nano-coating and their application in fibers-Case studies on the commercial application of surface-modified fibers	[9]
Applications and Sustainability in Fiber Technology Fiber applications in high-performance textiles and composites- Biomedical applications of surface-engineered fibers- Sustainability in fiber production - Life cycle analysis and green chemistry-Emerging technologies and innovations in fiber surface characterization-Global challenges and opportunities in fiber technology	[9]
Total Hours:	**45**

Text Book(s):	
1.	Hearle, J. W. S., & Morton, W. E. (2008). "Physical properties of textile fibres", 4th Edition, Wood Head Publishing, 2008
2.	Bhat, N. V. "Surface modification of Textiles", 1st Edition, Woodhead Publishing.,2016
Reference(s):	
1.	Kumar, B., & Kothari, V. K. "Biodegradable and sustainable fibres", Woodhead Publishing", 2014
2.	Bhattacharya, A., & Rawlins, J. W. (Eds.). "Characterization of polymer surfaces and thin films" Springer, 2011
3.	Chawla, K. K. "Composite materials: Science and applications", 2nd Edition, Springer Nature Publications, 2012.

*****SDG 9: Industry, Innovation, and Infrastructure

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Fundamentals of Fiber Surfaces**	
1.1	Introduction to Fiber Types - Natural vs. Synthetic	2
1.2	Basic Properties of Fibers - Mechanical, Thermal, Chemical	1
1.3	The Molecular Structure of Fibers and Impact on Surface Properties	2
1.4	Overview of Surface Properties - Roughness, Porosity, Functionality	2
1.5	Importance of Surface Characteristics in Fiber Performance	2
2.0	**Surface Analysis Techniques**	
2.1	Introduction to Microscopy – Principles of SEM and TEM	2
2.2	Atomic Force Microscopy (AFM) – Setup and Operation	1
2.3	Spectroscopic Methods for Surface Analysis - XPS, FTIR	2
2.4	Surface Topography Measurements and Interpretations	1
2.5	Practical Aspects of Conducting Contact Angle Measurements	3
3.0	**Surface Property Fundamentals**	
3.1	Theories of Surface Energy and Implications for Adhesion	2
3.2	Wettability of Fibers and Its Importance in Textile Processing	2
3.3	Chemical Composition of Fiber Surfaces and Effects on Dyeing/Finishing	2
3.4	Mechanical Interlocking and Surface Bonding in Composites	1
3.5	Influence of Environmental Factors on Fiber Surface Properties	2
4.0	**Modifying Fiber Surfaces**	
4.1	Chemical Surface Modification - Coating and Grafting Techniques	2
4.2	Physical Methods - Plasma Treatment, Corona Discharge	2
4.3	Enzymatic Treatments and Benefits for Natural Fibers	2
4.4	Recent Advances in Nano-Coating and Their Applications	1
4.5	Case Studies on Commercial Application of Modified Fibers	2
5.0	**Applications and Sustainability in Fiber Technology**	
5.1	Fiber Applications in High-Performance Textiles and Composites	2
5.2	Biomedical Applications of Surface-Engineered Fibers	2
5.3	Sustainability in Fiber Production - Life Cycle Analysis and Green Chemistry	2
5.4	Emerging Technologies and Innovations in Fiber Surface Characterization	2
5.5	Global Challenges and Opportunities in Fiber Technology	1

Course Designer(s)

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

60 TT E 42	Clothing Science	Category	L	T	P	Credit
		PE	2	0	2	3

Objectives

- To study the basic understanding of comfort aspects of textile materials.
- To acquire knowledge on use of fabrics for specialty applications.
- To understand the multidisciplinary nature of the subject,
- To encompassing various concepts of physics & psychological science
- To design and development and material characterization with scientific approaches

Pre-requisites

Knitting Technology

Course Outcomes

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

CO1	Know the concepts of clothing science	Understand
CO2	Apply the theory of psychological factor in apparel manufacturing	Apply
CO3	Recognizes the procedure involved in testing of fabrics with respect to comfort	Understand
CO4	Analysis the comfort characteristics of various fabrics	Analyse
CO5	Correlate the property of the fabric with comfort to the wearer	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	3	-	3	-	-	-	-	-	-	-	-	-	-	-
CO2	3	3	-	3	-	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	3	-	-	-	-	-	-	-	-	-	2	-
CO4	3	3	-	3	-	-	-	-	-	-	-	-	2	-	-
CO5	3	3	-	3	-	-	-	-	-	-	-	-	-	-	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)				Model Examination (Marks)	End Sem Examination (Marks)	
	Test 1		Test 2				
	Theory	Lab	Theory	Lab	Lab	Theory	Lab
Remember	-	-	-	-	-	-	-
Understand	30	-	30	-	-	60	-
Apply	30	50	-	50	50	20	50
Analyse	-	50	30	50	50	20	50
Evaluate	-	-	-	-	-	-	-
Create	-	-	-	-	-	-	-
Total	60	100	60	100	100	100	100

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 TT E 42 – Clothing Science

Semester	Hours / Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VII	2	0	2	60	3	50	50	100

Introduction to Comfort Science * Comfort – types and definition and importance - Scales of measurement - direct response scales and wear trial techniques. Understanding and components of comfort preferences and perception.	[6]
Psychological Science * Psychological comfort: Neuro-physiological basis of sensory perceptions related to comfort. Measurement techniques for assessing comfort responses to mechanical and thermal stimuli.	[6]
Thermo-Physiological Science * Thermoregulatory mechanisms of the human body and their role in comfort. Fabric porosity and clothing comfort. Thermal comfort, Heat transfer, Moisture vapour permeability and Air permeability.	[6]
Heat and Moisture Transport * Heat and moisture transfer mechanisms: Heat transport - Moisture transport - moisture exchange and temperature regulation by the wearer, Heat and Moisture Exchange. Impact of physical properties of fibres and fabric behaviour on comfort.	[6]
Testing of Fabrics* Assessing various comfort characteristics - thermal comfort, stiffness and softness. Clothing comfort performance based on fabric properties - Thermal Properties, Moisture Management and Durability	[6]
Practical: 1. Measurement of air permeability of an apparel 2. Measurement of water vapour permeability of an apparel 3. Measurement of wickability of the apparel 4. Measurement of thermal resistance and thermal conductivity of an apparel 5. Determine of absorption rate of an apparel 6. Determine the seam strength of an apparel 7. Determine the elasticity of the given apparel 8. Determine the bursting strength of the given apparel 9. Determine the elongation rate of the given apparel 10. Determination of handle value of an apparel **Tools used: Nil**	[30]
Total Hours: (Lecture - 30; Practical - 30)	**60**

Text Book(s):	
1.	Li Y., "The Science of Clothing Comfort", Textile Progress 31:1-2, Taylor and Francis, UK,2001, ISBN: 1870372247 | ISBN-13: 9781870372244
2.	Apurba Das., and Alagirusamy R., "Science in clothing comfort", Wood head Publishing India Pvt. Ltd., India, 2010, ISBN: 1845697898 | ISBN-13: 9781845697891
Reference(s):	
1.	Hassan M. Behery., "Effect of Mechanical and Physical Properties on Fabric Hand", Woodhead Publishing Ltd.,2005, ISBN: 1855739186 | ISBN-13: 9781855739185
2.	Ukponmwan J.O., "The Thermal-insulation Properties of Fabrics", Textile Progress 24:4, 1-54,Taylor and Francis, UK, 1993, ISBN: 1870812654 | ISBN-13: 9781870812658
3.	Guowen Song., "Improving comfort in clothing", Wood head Publishing Ltd., UK, 2011, ISBN:1845695399 | ISBN-13: 9781845695392

*SDG 15 – Life on land

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**

Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of Hours
1	**Introduction to Comfort Science**	
1.1	Comfort – types and definition and importance	2
1.2	Scales of measurement	1
1.3	Direct response scales and wear trial techniques.	1
1.4	Understanding and components of comfort preferences and perception	2
2	**Psychological Science**	
2.1	Psychological comfort: Neuro-physiological basis of sensory perceptions related to comfort.	2
2.2	Measurement techniques for assessing comfort responses to mechanical stimuli	2
2.3	Measurement techniques for assessing comfort responses to thermal stimuli	2
3	**Thermo - Psychological Science**	
3.1	Thermoregulatory mechanisms of the human body	1
3.2	Thermoregulatory mechanisms role in comfort.	1
3.3	Fabric porosity and clothing comfort.	1
3.4	Thermal comfort, Heat transfer,	1
3.5	Moisture vapour permeability and Air permeability	2
4	**Heat and Moisture Transport**	
4.1	Heat and moisture transfer mechanisms	1
4.2	Heat transport - Moisture transport	1
4.3	Moisture exchange and temperature regulation by the wearer	1
4.4	Heat and Moisture Exchange	1
4.5	Impact of physical properties of fibres	1
4.6	Fabric behaviour on comfort	1
5	**Testing Fabrics**	
5.1	Assessing various comfort characteristics -	1
5.2	Thermal comfort, stiffness and softness.	1
5.3	Clothing comfort performance based on fabric properties -	1
5.4	Thermal Properties,	1
5.5	Moisture Management	1
5.6	Durability	1
Practical:		
11.	Measurement of air permeability of an apparel	3
12.	Measurement of water vapour permeability of an apparel	3
13.	Measurement of wickability of the apparel	3
14.	Measurement of thermal resistance and thermal conductivity of an apparel	3
15.	Determine of absorption rate of an apparel	3
16.	Determine the seam strength of an apparel	3
17.	Determine the elasticity of the given apparel	3
18.	Determine the bursting strength of the given apparel	3
19.	Determine the elongation rate of the given apparel	3
20.	Determination of handle value of an apparel	3

Course Designer

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

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

60 TT E 43	ERP and MIS in Apparel Industry	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To automate the business functions, Enterprise Resource Planning (ERP) is Business Process Management Software
- To provide knowledge implementation of ERP
- To give an over view of the business Modules of ERP package
- To include the concept of ERP in apparel industry
- To implement the management information system in garment industry.

Pre-requisites

- Garment Manufacturing Technology II

Course Outcomes

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

CO1	Remember the product and service improvement..	Remember
CO2	Comprehend the Enterprise Resource Planning and its Functions	Understand
CO3	Apply growth of existing product lines.	Understand
CO4	Analyse the systems and supports new product development.	Apply
CO5	Recognize the Modernize Business System and Processes	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	3	-	-	-	-	-	-	-	3	3	-
CO2	3	2	-	-	3	-	-	-	-	-	-	-	3	3	-
CO3	3	2	-	-	3	-	-	-	-	-	-	-	3	2	-
CO4	3	2	-	-	3	-	-	-	-	-	-	-	2	2	-
CO5	3	2	-	-	3	-	-	-	-	-	-	-	2	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	25	25	30
Understand	35	10	30
Apply	-	25	20
Analyse	-	-	20
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 TT E 43 - ERP and MIS in Apparel Industry								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	3	0	0	45	3	40	60	100

Introduction to ERP * Introduction: ERP: An Overview, enterprise – an overview, types of Enterprises, need for ERP,benefits of ERP, ERP and related technologies, Business Process Reengineering (BPR), Benefitsof BPR.	[9]
Implementation of ERP * Implementation of ERP: ERP implementation lifecycle, implementation methodology, hidden Costs, organizing the implementation, vendors, consultants and users, contracts with vendors, consultants and employees, project management and monitoring.	[9]
The Business Modules ** The Business Modules: Business modules in an ERP package - finance, manufacturing, humanresources, plant maintenance, materials management, quality management, sales and distribution Significance and advantages of each of the modules,	[9]
ERP in apparel industry ** ERP in apparel industry: Production resource planning – principles and management of and demand chain analysis– quick response strategy - material management for „Quick Response" – Just in Time (JIT) Technology"; Production planning, Costing and merchandising software.	[9]
Computer Applications ** Computer Applications: Management Information System in garment industry – EDI in garmenttechnology; Use of Computers in Designing, Pattern making, computerized production systems,communicating with vendors and buyers; Telephone, fax, video conferencing, intranet, internet etc; Export documentation, retailing; Methods of communicating with consumers	[9]
Total Hours:	**45**

Text Book(s):	
1.	D. Anita Rachel, "ERP in Apparel Industry", Kongunadu Publications India Pvt Ltd, ISBN: 978-93-86770-19-6, 2017.
2.	Alexis Leon, " ERP Demystified", Tata McGraw Hill, New Delhi, 2000
Reference(s):	
1.	Rahul Altekar , V., "Enterprise Resource Planning, Theory & Practice", Printice Hall of India, New Delhi, 2005.
2.	Leon , V., "Enterprise Resource Planning", Diamond Publications, New Delhi, 2018.

** SDG 4: Quality Education, SDG9: Industry, Innovation, and Infrastructure

**SDG 12: Responsible Consumption and Production, SDG 8: Decent Work and Economic Growth

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**

Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	An Overview-ERP , enterprise	
1.1	Types of Enterprises, need for ERP	**1**
1.2	Benefits of ERP, ERP and related technologies	**2**
1.3	ERP and related technologies	**2**
1.4	Business Process Reengineering (BPR)	**2**
1.5	Benefits of Business Process Reengineering (BPR)	**1**
2.0	Implementation of ERP	
2.1	Implementation lifecycle, implementation methodology	**2**
2.2	Hidden Costs	**1**
2.3	Organizing the implementation	**1**
2.4	Vendors, consultants and users	**1**
2.5	Contracts with vendors	**1**
2.6	Implementation of ERP	**1**
2.7	Consultants and employees	**1**
2.8	Project management and monitoring	**1**
3.0	Business modules in an ERP package	
3.1	Finance, manufacturing, humanresources,	**2**
3.2	Plant maintenance, materials management	**2**
3.3	Sales and distribution	**2**
3.4	Significance and advantages of each of the modules,	**2**
3.5	Business modules in an ERP package	**1**
4.0	Production resource planning	
4.1	Principles and management of and demand chain analysis	**1**
4.2	Quick response strategy	**2**
4.3	Material management for „Quick Response	**2**
4.4	Just in Time (JIT) Technology	**1**
4.5	Production planning, Costing and merchandising software.	**1**
4.6	Production resource planning	**2**
5.0	Management Information System in garment industry	
5.1	EDI in garmenttechnology;	1
5.2	Use of Computers in Designing	1
5.3	Pattern making, computerized production systems	1
5.4	Communicating with vendors and buyers	**1**
5.5	Telephone, fax, video conferencing, intranet, internet etc	**1**
5.6	Export documentation, retailing	**2**
5.7	Methods of communicating with consumers	**1**
5.8	Management Information System in garment industry	**1**

Course Designer(s)

1. Mr.G.Devanand - devanandg@ksrct.ac.in

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

60 TT E 44	Textile and Apparel Entrepreneurship	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- Aware of the importance of entrepreneurship opportunities available in the society for the entrepreneur.
- Acquaint them with the challenges faced by the entrepreneur.
- Comprehend the market survey and techno economic feasibility assessment.
- Apprise them costing and break-even analysis.
- Mindful the Sickness in small industries, causes and consequences, corrective measures

Pre-requisites

- Garment Manufacturing Technology I&II

Course Outcomes

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

CO1	State the entrepreneurship concept, definition and characteristics and the types of entrepreneurship and entrepreneurial growth.	Understand
CO2	Categorize the types of small-scale industries and the market survey and techno-economic feasibility assessment.	Remember
CO3	Explain the sources of finance and financial assistance, costing and break-even analysis.	Understand
CO4	Describe the sickness in small industries, its causes and consequences, corrective measures, and the various government policies for small-scale enterprises and business incubators.	Remember
CO5	Comprehend the various electronic commerce, small enterprises and various leadership in the new economy and hiring the right employees	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	2	3	2
CO2	3	2	-	-	-	-	-	-	-	-	-	-	2	2	2
CO3	3	2	-	-	-	-	-	-	-	-	-	-	3	2	2
CO4	3	1	-	-	-	-	-	-	-	-	-	-	3	2	2
CO5	2	2	-	-	-	-	-	-	-	-	-	-	3	2	2

3 - Strong; 2 - Medium; 1 – Some

Assessment Pattern

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

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 TT E 44 - Textile and Apparel Entrepreneurship								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	3	0	0	45	3	40	60	100

Entrepreneurship** ** Introduction of Entrepreneurship – Basic Understanding Concept, definition, characteristics and functions. Types of Entrepreneurs– Corporate Entrepreneurship, Difference between Entrepreneur and Entrepreneur, Entrepreneurship in Economic Growth, Factors Affecting Entrepreneurial Growth.	[9]
Small Scale Industries * Small Scale Industries - Definition, Classification – Characteristics, Ownership Structures– Steps involved in setting up a small industry —Analysis of current in respective business Market Survey and Research, Techno-Economic Feasibility Assessment – Preparation of Preliminary Project Reports –	[9]
Finance Support and Financial Institutions * Need – Sources of Finance, Term Loans, Capital Structure, Financial Institution, Management of working Capital, Costing, Break Even Analysis, Taxation – Income Tax, GST Documentation procedure	[9]
Support to Entrepreneurs * Sickness in small Business – Concept, Magnitude, Causes and Consequences, Corrective Measures – Business Incubators – Government Policy for Small Scale Enterprises – Growth Strategies in small industry – Expansion, Diversification, Joint Venture, Merger and Sub Contracting – Formation of economic zones and various tax reduction and exemption.	[9]
Export Documentation and Procedure for Small Enterprises ** Electronic commerce and small enterprises, Franchising, Leadership in the New Economy, Hiring the Right Employees, Building the Right Organizational culture and structure, and the challenge of Motivating Workers. Limitation of Corporate Entrepreneurship.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Khanka. S.S., “Entrepreneurial Development” S.Chand & Co. Ltd., Ram Nagar, New Delhi, 2013.ISBN: 81 – 219 – 1801–4
2.	Donald F Kuratko, “Entrepreneurship – Theory, Process and Practice”, 9th Edition, Cengage Learning, 2014.ISBN: 9780357697962
Reference(s):	
1.	Hisrich R D, Peters M P, “Entrepreneurship” 8th Edition, Tata McGraw-Hill, 2013, ISBN: 978 – 9339205386.
2.	Mathew J Manimala, “Entrepreneurship theory at cross roads: paradigms and praxis” 2nd Edition Dream tech, 2005. ISBN : 8177224603.

*SDG 8: Decent Work and Economic Growth

**SDG 12: Responsible Consumption and Production

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**

Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Entrepreneurship**	
1.1	Introduction of Entrepreneurship	1
1.2	Basic Understanding Concept, definition	1
1.3	characteristics and functions	1
1.4	Types of Entrepreneurs	1
1.5	Corporate Entrepreneurship	1
1.6	Difference between Entrepreneur and Entrepreneur	1
1.7	Entrepreneurship in Economic Growth	1
1.8	Factors Affecting Entrepreneurial Growth	1
2.0	**Small Scale Industries**	
2.1	Small Scale Industries	1
2.2	Definition, Classification	1
2.3	Characteristics, Ownership Structures	1
2.4	Project Formulation	1
2.5	Steps involved in setting up a small industry	1
2.6	identifying, selecting a Good Business opportunity	1
2.7	Analysis of current in respective business Market Survey and Research	2
2.8	Techno-Economic Feasibility Assessment	1
2.9	Preparation of Preliminary Project Reports,	1
2.10	Sources of Information – Classification of Needs and Agencies	1
3.0	**Finance Support and Financial Institutions** ,	
3.1	Need – Sources of Finance	1
3.2	Term Loans	1
3.3	Capital Structure	1
3.4	Financial Institution	1
3.5	Management of working Capital	1
3.6	Costing	1
3.7	Break Even Analysis,	1
3.8	Taxation – Income Tax	1
3.9	GST Documentation procedure	1
4.0	**Support to Entrepreneurs**	
4.1	Sickness in small Business	1
4.2	Concept, Magnitude,	1
4.3	Causes and Consequences, Corrective Measures	1
4.4	Business Incubators	1
4.5	Government Policy for Small-Scale Enterprises	1
4.6	Growth Strategies in small industry	1
4.7	Expansion, Diversification	1
4.8	Joint Venture, Merger and Sub Contracting	1
4.9	Formation of economic zones and various tax reduction and exemption	2
5.0	**Export Documentation and Procedure for Small Enterprises**	
5.1	Electronic commerce and small enterprises	1
5.2	Franchising	1

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5.3	Leadership in the New Economy	1
5.4	Hiring the Right Employees	1
5.5	Building the Right Organizational culture and structure	1
5.6	Challenge of Motivating Workers.	1
5.7	Limitation of Corporate Entrepreneurship.	1

Course Designer(s)

1. Dr KR. Nandagopal, nandagopal@ksrct.ac.in

60 TT E 45	Smart Textiles	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To provide an overview about the smart technology, material selection, design and manufacturing system.
- To teach the heat storage and thermo-regulating properties of textiles.
- To give an overview on of Thermal insulated textiles and educate on the various functional finishes involved in Thermal insulated textiles production.
- To inculcate the scope, construction and functions of wearable technologies.
- To enlighten the Bioprocessing and Tissue engineering applications for smart textiles and clothing.

Pre-requisites

Technical Textiles I and II

Course Outcomes

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

CO1	Recall and list key materials and principles underpinning smart textiles.	Remember
CO2	Explain the functions and applications of heat storage and thermo-regulated textiles.	Understand
CO3	Demonstrate the use of thermal sensitive materials in practical scenarios.	Apply
CO4	Differentiate between various wearable technologies and their specific purposes.	Analyse
CO5	Design a basic concept for a smart interactive garment for a given context.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	-	-	-	-	-	-	-	-	-	-	3	3	-
CO2	3	3	-	-	-	-	-	-	-	-	-	-	3	3	-
CO3	3	3	-	-	-	-	-	-	-	-	-	-	3	3	-
CO4	3	3	-	-	-	-	-	-	-	-	-	-	3	3	-
CO5	3	3	-	-	-	-	-	-	-	-	-	-	3	3	3

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	10	10	20
Understand	50	20	20
Apply	-	15	30
Analyse	-	15	30
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT E 45 - Smart Textiles								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	3	0	0	45	3	40	60	100

Essentials of Smart Textile * An overview on smart textiles, electrically active polymers materials- application of non-ionic polymer gel and elastomers for artificial muscles; heat storage and thermo regulated textiles and clothing, thermally sensitive materials, cross – linked polymers of fibre substrates as multifunctional and multi-use intelligent material; mechanical properties of fibre Bragg gratings, optical responses of FBG (Fibre Bragg grating) sensors under deformation; smart textile composites integrated with optic sensors	[9]
Heat Storage and Thermo Regulated Textiles and Clothing * Introduction – Bascs of heat storage materials – Manufacture of heat storage and thermo regulated material: Phase change materials or impregnated fibres, coated fabric, fibre spinning - properties of heat storage and thermo regulated textiles & clothing: Thermal resistance, thermo regulating properties, antimicrobial properties – Applications of heat storage and thermo regulated textiles and clothing.	[9]
Thermally Sensitive Material * Introduction – Thermal storage and thermal insulating fibers: Use of ceramics as melt dope additives, Hollow fibres, Insulating structures with PCM – Thermal insulation through polymeric coating: Water proof breathable coatings, Water proof breathable membranes-Designing of fabric assemblies.	[9]
Wearable Technologies * Introduction – Basics of embroidery technology-Embroidery for technical applications: Tailored fibre placement, medical textiles. Introduction-ARTS- The symbiotic relationship between textiles and computing-Wearable motherboard: performance requirements, design and structure, Production system and its potential applications. Introduction: Wearable technology- performance requirements-prototype: user interface, survival features in the suit, Wearable technology for snow clothing.	[9]
Smart Interactive garments * Smart interactive garments for combat training, hospital and patient care; smart garments in sports and fitness activities; smart garments for children; smart home textiles	[9]
Total Hours:	**45**

Text Book(s):	
1.	Van Langenhove, L. “Smart Textiles: Past, Present, and Future Handbook of Smart Textiles” Springer, Singapore, 2014, https://doi.org/10.1007/978-981-4451-68-015-1.
2.	Stefan Schneegass, Oliver Amft, “Smart Textiles Fundamentals, Design, and Interaction”, Springer Cham, Springer International Publishing AG 2017, 978-3-319-50123-9 Published: 10 February 2017, Edition 1, https://doi.org/10.1007/978-3-319-50124-6
Reference(s):	
1.	Ornaghi, Heitor & Motta Neves, Roberta & Monticeli, Francisco & Dall Agnol, Lucas. (2022). Smart Fabric Textiles: Recent Advances and Challenges. Textiles. 2. 582-605. 10.3390/textiles2040034.
2.	Vladan Koncar, Smart Textiles and Their Applications,1st Edition, wood head publisher, April 22, 2016,
3.	R.A.Chapman, “Smart Textiles for protection”, The Textile Institute & Woodhead Publishing, UK. 2013.
4.	J.Mccann & D.Bryson ,”Smart Clothes and Wearable Technologies”, The Textile Institute & Woodhead Publishing, UK, 2010

*SDG:09 : Industry Innovation and Infrastructure

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Essentials of Smart Textile ***	
1.1	Smart Textiles: Definition and Scope	1
1.2	Evolution of Smart Textiles	1
1.3	Future Trends in Smart Textiles	1
1.4	Introduction to Electrically Active Polymers	1
1.5	Non-Ionic Polymer Gel	1
1.6	Elastomers in Smart Textiles	1
1.7	Applications in Artificial Muscles	1
1.8	Case Studies: Electrically Active Polymers	1
2.0	**Heat Storage and Thermo Regulated Textiles and Clothing ***	
2.1	Basics of Heat Storage Materials	1
2.2	Phase Change Materials in Textiles	1
2.3	Manufacturing Techniques: Impregnated Fibres	1
2.4	Coated Fabric for Heat Storage	1
2.5	Properties of Thermo Regulated Textiles	1
2.6	Applications of Heat Storage Textiles	1
3.0	**Thermally Sensitive Material ***	
3.1	Introduction to Thermally Sensitive Materials	1
3.2	Thermal Storage Fibers	1
3.3	Insulating Structures with PCM	1
3.4	Polymeric Coating for Thermal Insulation	1
3.5	Use of Ceramics as Additives	1
3.6	Designing Fabric Assemblies	1
4.0	**Wearable Technologies ***	
4.1	Introduction to Wearable Technologies	1
4.2	Embroidery for Technical Applications	1
4.3	Advanced Responsive Textile Structures (ARTS)	1
4.4	Wearable Motherboard: Design	1
4.5	Wearable Motherboard: Structure and Applications	1
4.6	Prototype Development for Wearables	1
4.7	User Interface in Wearable Technology	1
4.8	Discussion on Wearable Technologies	1
5.0	**Smart Interactive garments ***	
5.1	Smart Garments in Combat Training	1
5.2	Smart Garments for Hospital and Patient Care	1
5.3	Smart Garments in Sports	1
5.4	Smart Garments for Children	1
5.5	Smart Home Textiles	1
5.6	Discussion on Smart Interactive Garments	1
5.7	Introduction to Fibre Bragg Gratings	1
5.8	Mechanical Properties of FBG	1
5.9	Optical Responses of FBG Sensors	1
5.10	Integration with Optic Sensors	1
5.11	Smart Textile Composites	1

Course Designer(s)

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

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

60 TT E 46	Supply Chain Management for Textile and Apparel Industry	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To provide an insight on the fundamentals of supply chain networks, tools and techniques.
- To study the supply chain management in apparel industry.
- To know the e-business and global practices in supply chain systems.
- To train the students to new and recent developments in supply chains and information technology.
- To study the Customer relationship management.

Pre-requisites

- Garment Manufacturing Technology II

Course Outcomes

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

CO1	Explain the principles of supply chain management and its drivers and maintaining financial stability in textile apparel industry.	Remember
CO2	Analyse the supply and demand cycle and economies of scale in apparel industry.	Analyse
CO3	Explain the role and characteristics of transportation in textile and apparel network.	Understand
CO4	Discuss the importance of coordination and obstacles to co-ordination in supply chain.	Understand
CO5	Analyse the role of supply chain in customer relationship management.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	-	2	3
CO1	2	2	1	-	-	-	-	2	-	2	3	2	-	3	2
CO2	2	2	-	-	-	-	-	-	-	-	3	-	-	3	2
CO3	3	-	-	-	-	-	-	3	-	3	3	2	-	3	2
CO4	3	2	2	-	-	-	-	-	-	-	-	-	2	3	2
CO5	3	2	2	-	-	-	-	-	-	-	2	2	-	3	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	15	25	30
Understand	25	35	55
Apply	-	-	-
Analyse	20	-	15
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 TT E 46 - Supply Chain Management for Textile and Apparel Industry

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VII	3	0	0	45	3	40	60	100

Introduction * Basic principles of supply chain management and logistics, supply chain models, supply chain for volatile market; Supply chain drivers and metrics in apparel industries; Roll of supply chain in the textile and apparel industries financial stability.	[9]
Planning Supply & Demand * Planning supply and demand in apparel production house, managing economies of scale, supply cycle and inventory levels; Managing uncertainty in supply chain, safety pricing and inventory; Make Vs buy decision, make Vs hire decision; Geographical identification of suppliers - supplier evaluation, supplier selection, contract negotiations, finalization.	[9]
Transportation Designing & Planning ** Distribution network and design for global textile and apparel products, models of distribution – facility location and allocation of capacity, uncertainty on design and network optimization; Transportation - role of transportation in supply chain, modes of transportation, characteristics of transportation, transport design options for global textile and apparel network, trade-off in transport design, risk management in transportation, transport decision in practice for textile and apparel industries.	[9]
Coordination In Supply Chain & E- Business * Coordination in supply chain: The bullwhip effect, forecasting, obstacles to coordination in supply chain; Supply chain management for apparel retail stores, high fashion; Supply chain in e-business & b2b practices.	[9]
Global Practices In Supply Chain *** Import - Export management: Documentation, insurance, packing and foreign exchange; Methods of payments – Domestic, international, commercial terms; Dispute handling modes and channels; Supply chain and information system; Customer relationship management.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Janat Shah, “Supply Chain Management – Text and Cases”, Pearson Education, New Delhi, 2009. ISBN: 978-8131715178.
2.	Sunil Chopra and Peter Meindl, “Supply Chain Management-Strategy Planning and Operation”, PHI Learning / Pearson Education, 2010. ISBN: 978-81-317-3071-3.
Reference(s):	
1.	David Simchi-Levi, Philip Kaminsky, Edith Simchi-Levi, Ravi Shankar, “Designing and Managing the Supply Chain: Concepts, Strategies, and Cases”, Tata McGraw-Hill Education Pvt Ltd. New Delhi, 2010. ISBN-13: 978-0-07-066698-6.
2.	Amir Sinha, Herbert Kotzab, “Supply chain management”, Tata McGraw-Hill Education Pvt Ltd. New Delhi, 2012. ISBN-13: 978-0-07-133343-6.

*SDG 9: Industry, Innovation, and Infrastructure
**SDG 12: Responsible Consumption and Production
***SDG 17: Partnerships for the Goals.

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Introduction of supply chain management**	
1.1	Principles of supply chain management	1
1.2	Supply chain Models	1
1.3	Supply chain for volatile market	1
1.4	Drivers of SCM	1
1.5	Roll of supply chain in textile Industry	2
1.6	Supply Chain Metrics	1
1.7	Financial Stability	1
1.8	Sourcing and Pricing	1
2.0	**Planning supply and demand in apparel production house**	
2.1	Managing economies of scale	1
2.2	Supply cycle and inventory levels	1
2.3	Managing uncertainty in supply chain	1
2.4	Safety pricing and inventory	1
2.5	Make Vs buy decision, make Vs hire decision	2
2.6	Geographical identification of SCM	1
2.7	Supplier evaluation and selection	1
2.8	Contract negotiations and finalization	1
3.0	**Distribution network and design for global textile**	
3.1	Models of distribution	1
3.2	Facility location and allocation of capacity	1
3.3	Uncertainty on design and network optimization	1
3.4	Role of transportation	1
3.5	Modes of transportation	1
3.6	Characteristics of transportation	1
3.7	Risk management in transportation	2
3.8	Transport decision in practice for textile	1
4.0	**Coordination in supply chain**	
4.1	Bullwhip effect and forecasting	1
4.2	Obstacles to coordination in supply chain	1
4.3	SCM in retail stores	1
4.4	Supply chain in e-business	1
4.5	B2b practices	1
4.6	Import on business in customer service	1
4.7	Components of forecasting methods	1
4.8	SCM design for Apparel	2
5.0	**Import and Export management**	
5.1	Documentation, insurance and foreign exchange	1
5.2	Methods of payments	1
5.3	Domestic and international payment	1
5.4	Handling modes and channels	2
5.5	Supply chain and information system	1
5.6	Customer relationship management	2
5.7	Bill of exchange	1

Course Designer(s)

1. Mr.M.Arunkumar - arunkumar@ksrct.ac.in

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

60 TT E 47	Fashion Brand Management	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To understand the methods of managing brands and strategies for brand management.
- To understand the importance of brands
- To gain an insight into various brand management activities.
- Students will be able to understand various types of intellectual property rights
- Students will be able to read, understand and interpret branding.

Pre-requisites

- **Garment Manufacturing Technology II**

Course Outcomes

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

CO1	Gain knowledge on branding and strategic planning	Analyse
CO2	Learn brand equity and research techniques	Apply
CO3	Gain Knowledge on consumer behavior	Analyse
CO4	Summaries the concepts of market communication in branding	Analyse
CO5	Strategies brand revitalization	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	2	2	-	-	-	-	2	2	-	-	-	-	2
CO2	3	2	2	2	-	-	-	-			-	-	-	-	2
CO3	3	2	2	2	-	-	-	-	2	2	-	-	-	-	2
CO4	3	2	2	2	-	-	-	-			-	-	-	-	2
CO5	3	2	2	2	-	-	-	-	2	2	-	2	-	-	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. - Textile Technology

60 TT E 47 - Fashion Brand Management

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VII	3	0	0	45	3	40	60	100

OVERVIEW OF BRAND MANAGEMENT Significance of branding -brand defined -Difference between a Product and a Brand - rationale for building a brand - types of brands - Branding Challenges -Creating a brand - Strategic planning for the brand - Designing brand Identity -Measuring brand personality - Brand Image - Luxury Brands- Organizational culture and brand performance -Brand Mantras and Internal branding for a successful brand - Case study.	[9]
UNDERSTANDING AND MEASURING BRAND EQUITY Introduction - What is brand equity - Brand equity defined - Need for building brand equity -Steps in building a Brand -Researching for brand equity -Tracking a brand -The brand chain - Research techniques -Quantitative research techniques applied to branding - Measuring brand equity -Need for measuring brand equity -Methods to measure brand equity -Case Study	[9]
UNDERSTANDING CONSUMERS AND MARKETS Consumer behavior and the role of branding - concept of perception- brand evaluation and perception by customers -Consumer attitude -the Indian Consumer - Model of consumer decision making - Factorsaffecting consumer behavior - Brand loyalty and Brand commitment - Factors affecting brand loyalty - Concept of brand positioning - Positioning defined -Positioning strategy - Guiding principles for positioning - Repositioning- Case Study	[9]
BUILDING RESILIENT BRANDS Defining branding strategy -Strategies for choosing a brand name -Line extension Category Extension - Brand Sketching - Launching a brand extension - Managing brand architecture - Brand roles in the brand portfolio -Brand relationship spectrum -Managing Brands over time - Brand challenges - Reinforcing brands -Brand revitalization -Brand turnaround -Case Study	[9]
MANAGING BRANDS Branding and the marketing programme - Product Strategy -Pricing Strategy -Distribution Strategy - E- branding : Building the brand online -E-business strategy -Marketing and the internet - Branding and marketing communications -Communication options : Personal selling, sales promotions, Events and compaign marketing , Direct Marketing, Publicity and PR, Word of mouth, Internet marketing - Case Study	[9]
Total Hours:	**45**

Text Book(s):	
1.	David A. Aaker, Managing Brand Equity, Simon and Schuster, 2009.
2.	Kirti Dutta , brand management principles and practices-2012, Oxford University Press
Reference(s):	
1.	Moorthi YLR, Brand Management I edition, Vikas Publishing House 2012
2.	Lan Batey, Asain Branding A Great way to fly, PHI, Singapore, 2002.
3.	NR Subbaram, Demystifying Intellectual Property Rights, ISBN:9788180385780, LexisNexis, 2011
4	Sharon Givoni, Owning It: A Creative's Guide to Copyright, Contracts and the Law, Creative Minds, Publishing, 2015

*SDG 9 – Industry Innovation and Infrastructure

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**

Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Overview of Brand Management**	
1.1	Definition and significance of branding	2
1.2	Product vs. Brand - understanding differences	2
1.3	Rationale for building a brand and branding challenges	2
1.4	Strategic planning for branding	1
1.5	Designing brand identity and measuring brand personality	1
1.6	Organizational culture and brand performance - case study	1
2.0	**Understanding and Measuring Brand Equity**	
2.1	What is brand equity: Introduction and definition	2
2.2	Building brand equity - steps and research	2
2.3	Measuring brand equity - techniques and importance	1
2.4	Tracking a brand and the brand chain	2
2.5	Quantitative research techniques applied to branding	1
2.6	Case study on measuring brand equity	1
3.0	**Understanding Consumers and Markets**	
3.1	Consumer behavior and branding	1
3.2	Brand evaluation, perception, and consumer attitude	1
3.3	Model of consumer decision-making	2
3.4	Factors affecting consumer behavior and brand loyalty	2
3.5	Brand positioning and repositioning strategies	1
3.6	Case study on consumer behavior and market strategies	2
4.0	**Building Resilient Brands**	
4.1	Branding strategies and choosing a brand name	2
4.2	Brand extension strategies: Line and category	1
4.3	Managing brand architecture and portfolio	2
4.4	Brand roles and relationship spectrum	2
4.5	Reinforcing and revitalizing brands	1
4.6	Case study on brand resilience and revitalization	1
5.0	**Managing Brands**	
5.1	Branding and marketing strategy integration	2
5.2	E-branding and e-business strategies	2
5.3	Pricing, product, and distribution strategies	1
5.4	Marketing communications and its elements	1
5.5	Internet marketing techniques	1
5.6	Case study on brand management in practice	2

Course Designer(s)

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

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

60 TT E 51	New Millennium Fibres	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- Explore the evolution and current technologies of advanced fibers, including nanofibers and smart textiles.
- Examine production methods and innovations in fiber manufacturing.
- Assess the applications and properties of advanced fibers across various industries.
- Evaluate environmental impacts and promote sustainable practices in the fiber industry.
- Predict future developments and innovate within the field of fiber technology.

Pre-requisites

- Fibre Science

Course Outcomes

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

CO1	Identify and describe various advanced fibers and their properties.	Analyse
CO2	Master current production technologies and methods for creating advanced fibers.	Analyse
CO3	Design and implement fiber-based solutions for practical applications.	Apply
CO4	Analyse and advocate for sustainability in fiber production and use.	Analyse
CO5	Innovate and adapt to future trends in fiber technology.	Analyse

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	3	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	3	3	-	-	-	-	-	-	-	-	-	3	1	-
CO3	3	3	3	-	-	-	-	-	-	-	-	-	2	2	-
CO4	3	3	3	-	-	-	-	-	-	-	-	-	2	2	-
CO5	3	3	3	-	-	-	-	-	-	-	-	-	3	1	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT E 51 - New Millenium Fibres								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	3	0	0	45	3	40	60	100

Introduction to Advanced Fibers Evolution of Fiber Technologies: From Natural to Synthetic-Introduction to New Millennium Fibers: Characteristics and Classification-Key Advances in Synthetic Fibers: Nylon, Polyester, and Beyond-Overview of Nanofibers, Smart Textiles, and Biodegradable Fibers-The Role of Biopolymers and Biocompatibility in Fiber Development	[9]
Production Technologies* Nanotechnology in Fiber Production: Methods and Materials-Electrospinning Techniques for Nanofiber Fabrication-Innovations in Biodegradable Fiber Production-Industrial Applications of Smart Textile Technology-Scale-Up Challenges and Solutions in Advanced Fiber Manufacturing	[9]
Properties and Applications Mechanical and Chemical Properties of Advanced Fibers-Functional Aspects: Conductivity, Reactivity, and Adaptability in Smart Fibers-Medical Applications: Implantables and Non-implantable Healthcare Products-Environmental Applications: Filtration Systems and Eco-Friendly Materials-Smart Textiles in Consumer and Military Applications	[9]
Environmental Impact and Sustainability Life Cycle Assessment of Advanced Fibers-Environmental Impacts of Fiber Production Processes-Strategies for Reducing Carbon Footprint in Fiber Manufacturing-Recycling and Waste Management of Synthetic Fibers-Case Studies on Sustainable Practices in the Fiber Industry	[9]
Future Trends and Innovation Predicting the Next Generation of Fiber Technologies-Integration of IoT in Smart Textiles-Advanced Biopolymers and Their Future Applications-Potential Revolutionary Applications of Nanofibers-Overcoming Technical and Market Barriers for New Fibers	[9]
Total Hours:	**45**

Text Book(s):	
1.	Hearle, J. W. S. (2001). High-performance fibres. Woodhead Publishing.
2.	Morton, W. E., & Hearle, J. W. S. (2008). Physical properties of textile fibres (4th ed.). Woodhead Publishing.
Reference(s):	
1.	Hongu, T., & Phillips, G. O. (Eds.). (2005). New Millennium Fibers. Woodhead Publishing.
2.	Eichhorn, S. J., Hearle, J. W. S., Jaffe, M., & Kikutani, T. (Eds.). (2009). Handbook of textile fibre structure: Volume 1: Fundamentals and manufactured polymer fibres. Woodhead Publishing.
3.	Bunsell, A. R. (Ed.). (2018). Handbook of properties of textile and technical fibres (2nd ed.). Woodhead Publishing.

*****SDG 9: Industry, Innovation, and Infrastructure

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Introduction to Advanced Fibers**	
1.1	Evolution of Fiber Technologies: From Natural to Synthetic	1
1.2	Introduction to New Millennium Fibers: Characteristics and Classification	2
1.3	Key Advances in Synthetic Fibers: Nylon, Polyester, and Beyond	1
1.4	Overview of Nanofibers, Smart Textiles, and Biodegradable Fibers	2
1.5	The Role of Biopolymers and Biocompatibility in Fiber Development	3
2.0	**Production Technologies**	
2.1	Nanotechnology in Fiber Production: Methods and Materials	2
2.2	Electrospinning Techniques for Nanofiber Fabrication	1
2.3	Innovations in Biodegradable Fiber Production	2
2.4	Industrial Applications of Smart Textile Technology	2
2.5	Scale-Up Challenges and Solutions in Advanced Fiber Manufacturing	3
3.0	**Properties and Applications**	
3.1	Mechanical and Chemical Properties of Advanced Fibers	2
3.2	Functional Aspects: Conductivity, Reactivity, Adaptability in Smart Fibers	2
3.3	Medical Applications: Implantables and Non-implantable Healthcare Products	1
3.4	Environmental Applications: Filtration Systems and Eco-Friendly Materials	2
3.5	Smart Textiles in Consumer and Military Applications	3
4.0	**Environmental Impact and Sustainability**	
4.1	Life Cycle Assessment of Advanced Fibers	2
4.2	Environmental Impacts of Fiber Production Processes	1
4.3	Strategies for Reducing Carbon Footprint in Fiber Manufacturing	2
4.4	Recycling and Waste Management of Synthetic Fibers	2
4.5	Case Studies on Sustainable Practices in the Fiber Industry	2
5.0	**Future Trends and Innovation**	
5.1	Predicting the Next Generation of Fiber Technologies	2
5.2	Integration of IoT in Smart Textiles	1
5.3	Advanced Biopolymers and Their Future Applications	2
5.4	Potential Revolutionary Applications of Nanofibers	2
5.5	Overcoming Technical and Market Barriers for New Fibers	2

Course Designer(s)

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

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

60 TT E 52	Apparel Processing and Clothing Care	Category	L	T	P	Credit
		PE	2	0	2	3

Objectives

- To impart the knowledge of apparel processing.
- To impart the knowledge of apparel quality control.
- To impart the knowledge of apparel dyeing and printing machines.
- To impart the knowledge of apparel finishing and stain removal.
- To impart the knowledge of Care Labels, Laundering & Dry Cleaning

Pre-requisites

Textile Chemical Processing II

Course Outcomes

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

CO1	Enumerate the apparel pre-treatment processing and factors influencing creases and chafe marks.	Understand
CO2	Describe the various quality controls in garment accessories and stitching.	Understand
CO3	Analyse the various apparel dyeing and printing machines working principles and applications.	Analyse
CO4	Explain the various apparel finishing methods, classification of stains and stain removers.	Understand
CO5	Describe about system of care labels, laundering procedures and Dry cleaning operations and its materials.	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	-	2	-	-	-	-	-	-	-	-	2	-	-
CO2	3	3	-	-	2	-	-	-	-	-	-	-	-	2	-
CO3	3	3	-	-	2	-	-	-	-	-	-	-	2	-	2
CO4	3	3	-	-	2	-	-	-	-	-	-	-	2	-	2
CO5	3	3	-	-	2	-	-	-	-	-	-	-	2	-	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)				Model Examination (Marks)	End Sem Examination (Marks)	
	Test 1		Test 2				
	Theory	Lab	Theory	Lab	Lab	Theory	Lab
Remember	-	-	-	-	-		-
Understand	60	45	30	45	100	80	45
Apply	-	45	-	45	-	-	45
Analyse	-	10	30	10	-	20	10
Evaluate	-	-	-	-	-	-	-
Create	-	-	-	-	-	-	-
Total	60	100	60	100	100	100	100

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech. – Textile Technology

60 TT E 52 – Apparel Processing and Clothing Care

Semester	Hours / Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
VII	2	0	2	60	3	50	50	100

Apparel Processing * Apparel Processing: Pre-treatment of cotton apparels - desizing, scouring, bleaching and mercerization. Combined pre-treatment and dyeing methods. Special requirements of the chemicals used.	[6]
Quality Control In Apparel Processing * Introduction: Seams - Elasticated areas, Waist bands and cuffs. Shrink behaviour. Accessories. Sewing thread, Selection of fibre type for the thread, Thread selection .Interlining and care labelling.	[6]
Apparel Dyeing Machines & Printing techniques * Apparel Dyeing Machines: Working of Paddle, Drum dyeing, Washing, centrifuging. Apparel Printing: Flock printing, Foam printing. Transfer printing, Driers and Steamers.	[6]
Apparel Finishing & Stain Removal * Apparel Finishing: Mechanical finishing. Chemical finishing, enzyme, softening, soil release and wrinkle resistant finishes. Stain Removal: Classification of stains, Identification of the stain, Classification of stain removers.	[6]
Care Labels, Laundering & Dry Cleaning * Care Labels: Systems of care labelling- American and European Washing. Dry cleaning instructions. Laundering: Home laundering procedures for Cotton, Linen and Synthetic fabrics. Dry Cleaning: Dry cleaning operations.	[6]
Practical: 1. Investigate the Bleaching Process of Cotton Apparel 2. Demonstrate the Dyeing Process of Cotton Apparel 3. Apply the Batik Printing Technique to Apparel 4. Explore the Tie and Dye Printing Technique for Apparel 5. Perform Flock Printing on Cotton Apparel 6. Implement Mechanical Finishing Techniques on Apparel 7. Apply Chemical Finishing Methods on PC blended Apparel 8. Identify and Removing Stains from Apparel 9. Illustrate Home Laundering Procedures for Cotton Apparel 10. Demonstrate Proper Care Labelling for Apparel **Tools used: Nil**	[30]
Total Hours: (Lecture - 30; Practical - 30)	**60**

Text Book(s):	
1.	Subramanian Senthil kannan Muthu, "Circular Economy in Textiles and Apparel: Processing, Manufacturing, and Design" Woodhead Publishing, ISBN-13-978-0081026304. November 2018.
2.	Richard Blackburn, "Sustainable Apparel: Production, Processing and Recycling" Woodhead Publishing, ISBN-13-978- 1782423393, August 2015.
Reference(s):	
1.	Kamal Khurana, "Garment Dyeing" Sonali publishing, ISBN-13-978-8184116076, January 2012.
2.	Pat Armstrong "Wash, Wear, and Care: Clothing and Laundry in Long-Term Residential Care" Publisher McGill- Queen's University Press, April 2017.

*SDG 15 – Life on land

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of Hours
1	**Apparel Processing**	
1.1	Apparel Processing: Pre-treatment of cotton apparels	1
1.2	Desizing, scouring,	1
1.3	Bleaching and mercerization.	1
1.4	Combined pre-treatment and	1
1.5	Dyeing methods	1
1.6	Special requirements of the chemicals used	1
2	**Quality Control in Apparel Processing**	
2.1	Introduction: Seams - Elasticated areas, Waist bands and cuffs.	1
2.2	Shrink behaviour. Accessories. Sewing thread	2
2.3	Selection of fibre type for the thread	1
2.4	Thread selection	1
2.5	Interlining and care labelling.	1
3	**Apparel Dyeing Machines & Printing Techniques**	
3.1	Apparel Dyeing Machines: Working of Paddle,	1
3.2	Drum dyeing, Washing,	1
3.3	Centrifuging. Apparel Printing: Flock printing,	1
3.4	Foam printing. Transfer printing,.	1
3.5	Driers and Steamers	2
4	**Apparel Finishing & Stain Removal**	
4.1	Apparel Finishing: Mechanical finishing.	1
4.2	Chemical finishing, enzyme, softening,	1
4.3	Soil release and wrinkle resistant finishes	1
4.4	Stain Removal: Classification of stains	1
4.5	Identification of the stain	1
4.6	Classification of stain removers	1
5	**Care labels, Laundering & Dry Cleaning**	
5.1	Care Labels: Systems of care labelling	1
5.2	American and European Washing.	1
5.3	Dry cleaning instructions.	1
5.4	Laundering: Home laundering procedures for Cotton,	1
5.5	Home laundering procedures for Linen and Synthetic fabrics.	1
5.6	Dry Cleaning: Dry cleaning operations	1
Practical:		
21.	Investigate the Bleaching Process of Cotton Apparel	3
22.	Demonstrate the Dyeing Process of Cotton Apparel	3
23.	Apply the Batik Printing Technique to Apparel	3
24.	Explore the Tie and Dye Printing Technique for Apparel	3
25.	Perform Flock Printing on Cotton Apparel	3
26.	Implement Mechanical Finishing Techniques on Apparel	3
27.	Apply Chemical Finishing Methods on PC blended Apparel	3
28.	Identify and Removing Stains from Apparel	3
29.	Illustrate Home Laundering Procedures for Cotton Apparel	3
30.	Demonstrate Proper Care Labelling for Apparel	3

Course Designer

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

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

60 TT E 53	Sustainable Textiles and Apparels	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To get knowledge on Sustainable process
- To aware the supply chain of textiles
- To analyse the ecological parameters in textile industry
- To understand the reasons of carbon footprint and its causes
- To identify the sustainable fashion trends

Pre-requisites

- Technical Textile I & II

Course Outcomes

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

CO1	Describe the life cycle assessment of textiles	Understand
CO2	Describe the life cycle assessment of textiles	Understand
CO3	Analyse the carbon foot print and its impact on environment	Understand
CO4	Evaluate the life cycle impacts, modeling of life cycle impacts	Understand
CO5	Apply the standards of environmental footprints of various packaging systems	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	3	2	2
CO2	3	2	-	-	-	-	-	-	-	-	-	-	3	2	2
CO3	2	1	-	-	-	-	-	-	-	-	-	-	2	3	2
CO4	2	3	-	-	-	-	-	-	-	-	-	-	2	2	2
CO5	3	2	-	-	-	-	-	-	-	-	-	-	2	2	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

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

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech–Textile Technology								
60 TT E 53 – Sustainable Textiles and Apparels								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	3	0	0	45	3	40	60	100

Sustainable Development (SD) as a Goal in Production, Marketing and Trade * Concept, Theory behind, Sustainability in public sector and in industry, Environmental management systems, Environmental labeling, Recycling of material.	[9]
Supply Chain of Textiles * Fibers, Yarn and Fabric production, Garment manufacturing, Chemical treatment, Consumption, use and care, Disposal of circular economic-Funds utilization wastes	[9]
Life Cycle Assessment (LCA) and Ecological Key Figures (EKF) ** Life cycle assessment (LCA) methodology, Eight case studies, Life cycle inventory (LCI), Life cycle assessment (LCA), Costs, Ecological key figures (EKF), Applied ecological key figures (EKF) in spinning and weaving, Discussion on ecological key figures (EKF) of textile products, Relevant industrial case studies.	[9]
Carbon Footprint of Textile and Clothing Products *** Environmental Impacts of Apparel Production, Distribution, and Consumption, Eco-Parameters and Testing of Sustainable Textiles and Apparels, Sustainable Measures Taken by Industry Affiliates, Nonprofit Organizations and Governmental and Educational Institutions, Standards: Oeko-Tex Standard 100, ISO 22000, and ISO 31000, E3096 – 18, E2986 – 18, E2987 / E2987M – 20.	[9]
Sustainable Fashion *** The fashion industry, sustainability and business models. . Decode the past, present and future of sustainable fashion. Broad theoretical framework for traditional sustainable business models and the differences between these Models, Innovative –Sustainable models	[9]
Total Hours:	**45**

Text Book(s):	
1.	Subramanian Senthilkannan Muthu., "Sustainability in the Textile Industry", Springer, Singapore, 2017, ISBN:978- 981-10-2638-6.
2.	Subramanian Senthilkannan., "Roadmap to Sustainable Textiles and Clothing", Springer, Singapore. 2014, ISBN:978-981-287-065-0.
Reference(s):	
1.	Subramanian Senthilkannan., "Sustainable Innovations in Textile Fibre", Springer, Singapore, 2018, ISBN:978- 981-10-8578-9.
2.	Subramanian Senthilkannan., "Sustainable Innovations in Textile Chemical Processing", Springer, Singapore, 2018, ISBN: 978-981-10-8491-1.
3.	Subramanian Senthilkannan Muthu., and Yi Li., "Assessment of Environmental Impact by Grocery Shopping Bags,Springer Science & Business Media, 2013, ISBN: 978-981-4560-20-7.
4.	Subramanian Senthilkannan Muthu., "Environmental Footprints of Packaging", Springer, Singapore, 2015, ISBN: 978-981-287-913-4.

*SDG: 15 Life on Land

** SDG: 3 Good Health and Well Being

***SDG: 9 Industry, Innovation and Infrastructure

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**

Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Sustainable Development (SD) as a Goal in Production, Marketing and Trade**	
1.1	Concept, Theory behind in Sustainability	2
1.2	Environmental management systems	2
1.3	Environmental labeling	2
1.4	Recycling of material	2
1.5	Marketing and Trade	1
2.0	**Supply Chain of Textiles**	
2.1	Fibres Yarn, and Fabric production,	1
2.2	Garment manufacturing	2
2.3	, Chemical treatment	2
2.4	Consumption, use and care	2
2.5	Disposal of circular economic	1
2.6	Funds utilization wastes.	1
3.0	**Life Cycle Assessment (LCA) and Ecological Key Figures (EKF)**	
3.1	Life cycle assessment (LCA) methodology,	2
3.2	Eight case studies,Introduction	1
3.3	Life cycle inventory (LCI),	1
3.4	Life cycle assessment (LCA)	1
3.5	Costs, Ecological key figures (EKF)	1
3.6	Applied ecological key figures (EKF) in spinning and weaving,	1
3.7	Discussion on ecological key figures (EKF) of textile products	1
3.8	Relavent industrial case studies.	1
4.0	**Carbon Footprint of Textile and Clothing Products**	
4.1	Environmental Impacts of Apparel Production, Distribution, and Consumption,	1
4.2	Eco-Parameters and Testing of Sustainable Textiles and Apparels	1
4.3	Sustainable Measures Taken by Industry Affiliates, Nonprofit Organizations	2
4.4	Governmental and Educational Institutions	1
4.5	Standards: Oeko-Tex Standard 100	2
4.6	ISO 22000, and ISO 31000, E3096 – 18, E2986 – 18, E2987 / E2987M – 20.	2
5.0	**Sustainable Fashion**	
5.1	The fashion industry. .	1
5.2	sustainability and business models	2
5.3	Decode the past, present and future of sustainable fashion	2
5.4	Broad theoretical framework for traditional sustainable business models	2
5.5	The differences between these Models,Innovative –Sustainable models.	2

Course Designer(s)

1. Mr.G.Devanand - devanandg@ksrct.ac.in

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Approved in Academic Council Meeting held on 07/01/2023

60 TT E 54	Lean and Six Sigma concepts for Textiles and Apparel Industry	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To teach the concepts of Lean Manufacturing and six sigma.
- To provide knowledge on the implementation procedure for lean six sigma.
- To give an overview on various techniques of lean manufacturing.
- To inculcate the concepts of inventory control.
- To taught the implementation of lean techniques with various case studies

Pre-requisites

Garment Manufacturing Technology II

Course Outcomes

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

CO1	Explain the concepts, features and elements of lean manufacturing and six sigma.	Understand
CO2	Summarize the evolution, principles and scope of lean six sigma.	Remember
CO3	List out the techniques, approaches and production process for lean manufacturing	Understand
CO4	Discuss the concepts of Kanban, Kaizen, VSM and JIT in inventory control	Remember
CO5	Categorize the concepts of 5S, TPM and Implementation of lean techniques	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	3	-	-	-	-	-	-	-	-	2	1
CO2	3	-	-	-	3	-	-	-	-	-	-	-	-	2	1
CO3	3	-	-	-	3	-	-	-	-	-	-	-	-	3	1
CO4	3	-	-	-	3	-	-	-	-	-	-	-	-	3	1
CO5	3	-	-	-	3	-	-	-	-	-	-	-	-	3	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	25	25	35
Understand	35	35	65
Apply	-	-	-
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech–Textile Technology								
60 TT E 54 – Lean and Six Sigma concepts for Textiles and Apparel Industry								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	3	0	0	45	3	40	60	100

Introduction to Lean Manufacturing and Six Sigma * Introduction to Lean-Definition, Purpose, features of Lean; Need for Lean, Elements of Lean Manufacturing, Lean principles, the lean matrices. Definition of six sigma, origin of six sigma, six sigma concept, Critical Quality characteristics for six sigma.	[9]
Lean six sigma approach ** Definition, principles, scope and features of lean six sigma. The laws of lean six sigma, benefits of lean six sigma, Introduction to DMAIC tools.	[9]
Lean Production Preparation * Lean production processes, approaches and techniques.—Importance of focusing upon flow, wastes, types of wastes, impact of wastes, waste elimination methodologies, Tools include - Workplace organization –Stability, Cellular systems, Quick change and set-up reduction methods	[9]
Lean concepts in inventory control * Practical Kaizen Training, Key factors in Practical Kaizen Training, Lean Culture, Standardization, Standards and abnormality Control, Definition, Principles of JIT, Continuous Flow, Kanban, Value Stream Mapping, Current State VSM and Future state VSM, Poke – Yake..	[9]
Implementation of Lean Techniques * Visual Management, 5S, total productive maintenance, Small group activity, process flow diagram, establishing TAKT, ECRS. Implementation of lean six sigma in textile and apparel industries, Difficulties in implementation. Lean Implementation case study in Textile Industries	[9]
Total Hours:	**45**

Text Book(s):	
1.	Dennis P Hobbs, “Lean Manufacturing Implementation”, Cengage learning India Pvt Ltd, New Delhi, 2004
2.	John Black, “Lean Production Implementing a World Class System”, Industrial Press Inc, New York, 2008
Reference(s):	
1.	Askin G and Goldberg B, “Design and Analysis of Lean Production System”, John Wiley & Sons Inc, 2003.
2.	Bill Carrieva, “Lean Manufacturing That Works”, Prentice Hall of India Pvt Ltd, New Delhi,

*SDG3: Good Health and Well-being SDG9: Industry, Innovation, and Infrastructure
**SDG 12: Responsible Consumption and Production

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Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	Definition, Purpose, features of Lean	
1.1	Need for Lean, Elements of Lean	1
1.2	Manufacturing, Lean principles, the lean matrices	1
1.3	Definition of six sigma, origin of six sigma	1
1.4	Origin of six sigma, six sigma concept,	2
1.5	Critical Quality characteristics for six sigma	2
2.0	Definition, principles, scope of lean six sigma	
2.1	Features of lean six sigma	2
2.2	The laws of lean six sigma	2
2.3	benefits of lean six sigma,	2
2.4	Definition, principles, scope of lean six sigma	2
2.5	Introduction to DMAIC tools	**1**
3.0	Lean production processes, approaches and techniques	
3.1	Types of wastes, impact of wastes, waste elimination methodologies	2
3.2	Tools include - Workplace organization	2
3.3	Stability, Cellular systems	2
3.4	Quick change and set-up reduction methods	1
3.5	Lean production processes, approaches and techniques	2
4.0	Practical Kaizen Training	
4.1	Key factors in Practical Kaizen Training,	1
4.2	Lean Culture,	1
4.3	Standardization, Standards and abnormality Contro	1
4.4	Principles of JIT, Continuous Flow, Kanban,	1
4.5	Value Stream Mapping	1
4.6	Current State VSM	1
4.7	Future state VSM, Poke – Yake	2
4.8	Practical Kaizen Training	1
5.0	**AdvancedStructures**	
5.1	Visual Management	1
5.2	5S, total productive maintenance	1
5.3	Small group activity	1
5.4	Process flow diagram	1
5.5	Establishing TAKT	1
5.6	ECRS. Implementation of lean six sigma in textile and apparel industries	2
5.7	Difficulties in implementation	1
5.8	Lean Implementation case study in Textile Industries	1

Course Designer(s)

1. Mr.G.Devanand - devanandg@ksrct.ac.in

60 TT E 55	Textile Composites	Category	L	T	P	Credit
		PE	2	0	2	3

Objectives

- Understand the fundamental properties and classifications of fiber-reinforced polymers, resins, and composite materials.
- Explore manufacturing techniques of prepregs and preforms, focusing on textile preforms and their geometric aspects.
- Learn various manufacturing processes of composites, including open and closed mould processes and continuous processes for metal and ceramic matrix composites.
- Examine the mechanical properties of textile composites through testing for tensile, flexural, impact, interlaminar shear, and compression properties.
- Investigate the diverse applications of polymer composites in industries such as aerospace, construction, sports, electrical, biomedical, and vibration damping

Pre-requisites

- Nonwoven Technology

Course Outcomes

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

CO1	Recognize about composite materials their classifications and properties	Understand
CO2	Identify the manufacturing techniques for prepregs and preforms,	Understand
CO3	Show expertise in composite manufacturing processes,	Analyse
CO4	Evaluate mechanical properties of textile composites through testing	Apply
CO5	Apply knowledge of polymer composites by highlighting their versatile utility	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	2	2	-	-	2	3	2	-	3	2	-	-
CO2	3	2	-	1	2	-	-	2	2	2	-	3	2	-	-
CO3	3	2	-	2	2	-	-	2	2	2	2	3	2	3	2
CO4	3	2	-	2	2	-	-	2	2	2	-	3	2	-	-
CO5	3	2	-	1	2	-	-	2	2	2	-	3	2	-	-

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)				Model Examination (Marks)	End Sem Examination (Marks)	
	Test 1		Test 2				
	Theory	Lab	Theory	Lab	Lab	Theory	Lab
Remember	20	-	20	-	-	34	-
Understand	40	-	10	-	-	36	-
Apply	-	50	10	50	50	10	50
Analyse	-	50	20	50	50	20	50
Evaluate	-	-	-	-	-	-	-
Create	-	-	-	-	-	-	-
Total	60	100	60	100	100	100	100

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S. Rangasamy College of Technology – Autonomous R2022								
B. Tech. - Textile Technology								
60 TT E 55 - Textile Composites								
Semester	**Hours / Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	2	0	2	60	3	50	50	100

Introduction Fibre reinforced polymers materials, properties; resins - thermoset and thermoplastics, additives release agents; composite material classification and its properties; reinforcement – matrix interface wettability.	[6]
Prepregs And Preforms Introduction; manufacturing techniques, property requirements; textile preforms - weaving, knitting and braiding; geometrical aspects- fibre orientation, volume fraction, weight fraction and voids.	[6]
Techniques For Manufacture of Composites Introduction, manufacturing processes – open mould process, closed mould process and continuous process; metal matrix composites, ceramic matrix composites – types, importance and processing. Green Composites.	[6]
Mechanical Properties of Textile Composites Testing of reinforced plastics – tensile, flexural, impact, interlaminar shear and compression properties.	[6]
Application of Polymer Composites Composites - application in aerospace, construction industry, and sports products; electrical, polymer composite for biomedical and vibration damping.	[6]
Practical: 1. Testing mechanical properties of composite materials (tensile). 2. Testing mechanical properties of composite materials (compressive). 3. Testing mechanical properties of composite materials (flexural). 4. Investigating the thermal properties of composites (thermal conductivity, thermal expansion). 5. Analysing the effect of different reinforcement types and ratios on composite properties. 6. Developing and optimizing manufacturing processes for composite production. 7. Comparison of Thermoset and Thermoplastic Resins: 8. Analyse the impact of preform structure on composite performance 9. Investigation of Metal Matrix Composites 10. Development of Green Composites	[30]
Total Hours: (Lecture - 30; Practical - 30)	**60**

Text Book(s):	
1.	Leonard Hollaway, “Handbook of Polymer Composites for Engineering”, Wood head Publishing limited, 2007.
2.	Rajesh Mishra “Advances in Textile Structural Composites” MDPI Books.2022.
Reference(s):	
1.	White J R, and De S K, “Short Fiber-Polymer Composites”, Woodhead Publishing limited, 1996.
2.	Long A C, “Design and Manufacture of Textile Composites”, Woodhead Publishing limited, 2005.

*SDG 9 – Industry Innovation and Infrastructure

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of Hours
1	**Introduction**	
1.1	Fibre reinforced polymers materials properties	1
1.2	Resins - thermoset and thermoplastics	1
1.3	Additives release agents	1
1.4	Composite material classification and its properties	1
1.5	Reinforcement – matrix interface wettability	2
2	**Prepregs and preforms**	
2.1	Introduction; manufacturing techniques	1
2.2	Property requirements	1
2.3	Textile preforms - weaving, knitting and braiding	1
2.4	Geometrical aspects- fibre orientation	1
2.5	Volume fraction, weight fraction and voids.	2
3	**Techniques For Manufacture of Composites**	
3.1	Introduction, manufacturing processes	1
3.2	Open mould process	1
3.3	Closed mould process and continuous process	1
3.4	Metal matrix composites	1
3.5	Ceramic matrix composites	1
3.6	Green Composites	1
4	**Mechanical Properties of Textile Composites**	
4.1	Testing of reinforced plastics – tensile	2
4.2	Testing of reinforced plastics – flexural	1
4.3	Testing of reinforced plastics – impact	1
4.4	Testing of reinforced plastics – Interlaminar shear	1
4.5	Testing of reinforced plastics – Compression properties	1
5	**Applications of Polymer Composites**	
5.1	Composites - application in aerospace	1
5.2	Construction industry	1
5.3	Sports products	1
5.4	Electrical	1
5.5	Polymer composite for biomedical and vibration damping	2
Practical:		
31.	Testing mechanical properties of composite materials (tensile).	2
32.	Testing mechanical properties of composite materials (compressive).	2
33.	Testing mechanical properties of composite materials (flexural).	2
34.	Investigating the thermal properties of composites (thermal conductivity, thermal expansion).	2
35.	Analysing the effect of different reinforcement types and ratios on composite properties.	4
36.	Developing and optimizing manufacturing processes for composite production.	4
37.	Comparison of Thermoset and Thermoplastic Resins:	4
38.	Analyse the impact of preform structure on composite performance	4
39.	Investigation of Metal Matrix Composites	4
40.	Development of Green Composites	2

Course Designer(s)

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

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

60 TT E 56	Apparel Marketing and Merchandising	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To impart the knowledge of apparel marketing.
- To know the importance of apparel marketing strategies
- To understand the functions of apparel merchandising
- To learn the various process in apparel merchandising
- To communicate the knowledge of sourcing

Pre-requisites

- Garment Manufacturing Technology II

Course Outcomes

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

CO1	Interpret the basic functions of apparel marketing, concepts of marketing and buying behaviour.	Understand
CO2	Summarize the marketing strategy, new product development and various types of advertising.	Understand
CO3	Indicate the roles & responsibilities of a merchandiser and purpose of visual merchandising	Understand
CO4	Analyse the process flow in merchandising and prepare the time and action calendar.	Analyse
CO5	Classify the need for sourcing, material resource planning and sourcing strategies.	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	-	-	2	-	-	-	-	-	-	-	3	-	
CO2	3	2	-	-	2	-	-	-	-	-	-	-	3	-	2
CO3	3	2	-	-	2	-	-	-	-	-	-	-	3	-	2
CO4	3	2	-	-	2	-	-	-	-	-	-	-	3	2	2
CO5	3	2	-	-	2	-	-	-	-	-	-	-	3	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	20	20	24
Understand	40	20	52
Apply	-	-	-
Analyse	-	20	24
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S. Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT E 56 – Apparel Marketing and Merchandising								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	3	0	0	45	3	40	60	100

Apparel Marketing* Introduction, Meaning, nature, functions, importance, marketing environment - Definitions of Marketing, Concept of Marketing - Marketing Mix - Segmentation, Targeting, Positioning - Analysis of consumer markets and buyer behaviour - Product Mix, Product Life Cycle.	[9]
Marketing Strategy New Product Development - Pricing objectives & Pricing methods - Distribution Channels: Types, Levels, Development - Promotion Mix - Marketing channels, retailing and, wholesaling: its types - Domestic and international markets, E- Marketing - Advertising - types of advertising.	[9]
Apparel Merchandising Merchandising - definition, functions of merchandising division- roles and responsibilities of a merchandiser, quality of a merchandiser, importance of lead time and implications of lead time, visual merchandising–definition, objectives, purpose of visual merchandising.	[9]
Process flow in Merchandising** Tech Pack-Importance and contents of Tech pack, merchandiser's perspective of tech pack. Sampling: Importance of sampling, different forms of sampling. Approvals- Types of approvals. Pre-Production meeting, Production scheduling- Time and Action calendar, Fabric and trims consumption.	[9]
Sourcing Sourcing: Definition, need for sourcing, method of sourcing; Manufacturing resources planning (MRP); Sourcing strategies- Overseas sourcing. Supply chain and demand chain analysis- Materials management for quick response.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Philip Kotler, Kelvin Lane Keller, Abraham Koshy and MithileshwarJ ha, "Marketing Management a South Asian Perspective" Pearson Education India, 2006.
2.	John Donnellan "Merchandise Buying and Management", Farichild Publications, inc., New York ,2002.
Reference(s):	
1.	Gilbert, "Retail Marketing Management" Pearson India, 2014
2.	Dr. V.R. Sampath, Garment Marketing and Merchandising, Published by Kalaiselvi Pathippakam.2007.
3.	Virginia Grose, Basics Fashion Management 01: Fashion Merchandising, AVA publisher, Switzerland, 2011
4.	Fashion Merchandising: Principles and practice by James Clark, published by Palgrave Macmillan, 2014.

*SDG 8 - Create Decent Work and Economic Growth

**SDG 9 – Industry Innovation and Infrastructure

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**

Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Apparel Marketing**	
1.1	Meaning, nature, functions, importance,	1
1.2	Marketing environment - Definitions of Marketing,	1
1.3	Concept of Marketing	1
1.4	Marketing Mix - Segmentation	1
1.5	Marketing Mix - Targeting,	1
1.6	Marketing Mix - Positioning	2
1.7	Analysis of consumer markets and buyer behaviour	1
1.8	Product Mix	1
1.9	Product Life Cycle	1
2.0	**Marketing Strategy**	
2.1	New Product Development - Pricing objectives & Pricing methods	1
2.2	Distribution Channels: Types, Levels, Development	1
2.3	Promotion Mix - Marketing channels	1
2.4	Retailing and wholesaling - its types	2
2.5	Domestic and international markets	1
2.6	E- Marketing	1
2.7	Advertising - types of advertising	2
3.0	**Apparel Merchandising**	
3.1	Merchandising - definition, functions of merchandising division	2
3.2	roles and responsibilities of a merchandiser	2
3.3	quality of a merchandiser	1
3.4	importance of lead time	1
3.5	implications of lead time	1
3.6	Visual merchandising–definition, objectives, purpose of visual merchandising	2
4.0	**Process flow in Merchandising**	
4.1	Tech Pack-Importance and contents of Tech pack	2
4.2	Merchandiser's perspective of tech pack	1
4.3	Sampling: Importance of sampling, different forms of sampling. Approvals	1
4.4	Types of approvals	1
4.5	Pre-Production meeting	1
4.6	Production scheduling	1
4.7	Time and Action calendar	1
4.8	Fabric and trims consumption	1
5.0	**Sourcing**	
5.1	Sourcing: Definition, need for sourcing	2
5.2	Method of sourcing	1
5.3	Manufacturing resources planning (MRP)	2
5.4	Sourcing strategies	1
5.5	Overseas sourcing	1
5.6	Supply chain and demand chain analysis	1
5.7	Materials management for quick response	1

Course Designer(s)

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

60 TT E 57	Fashion Design: Process, Innovation and Practice	Category	L	T	P	Credit
		PE	3	0	0	3

Objectives

- To understand the sourcing ideas and formulation of design.
- To learn the concepts of boards and methods of display.
- To gain knowledge about the fabric sourcing and pattern development.
- To familiar with the functions of Pattern adaptation and prototype preparation.
- To understand the garment finishing process and portfolio preparation.

Pre-requisites

- Fashion Design – Principles & Silhouttes

Course Outcomes

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

CO1	Learn sourcing ideas and formulation of design.	Understand
CO2	Summarize the procedure for mood and story boards.	Understand
CO3	Gain knowledge on fabric sourcing and pattern construction.	Understand
CO4	Outline the procedure for prototype preparation	Understand
CO5	Express the requirement of portfolio presentation.	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	3	-	-	-	-	-	2	2	-	-	-	-	2
CO2	3	2	3	-	-	-	-	-			-	-	-	-	2
CO3	3	2	3	-	-	-	-	-	2	2	-	-	-	-	2
CO4	3	2	3	-	-	-	-	-			-	-	-	-	2
CO5	3	2	3	-	-	-	-	-	2	2	-	2	-	-	2
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Sem Examination (Marks)
	1	2	
Remember	20	20	34
Understand	40	40	66
Apply	-	-	-
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-
Total	60	60	100

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022								
B.Tech. Textile Technology								
60 TT E 57 - Fashion Design: Process, Innovation and Practice								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VII	3	0	0	45	3	40	60	100

Concept and Theme Development Inspiration – Idea sourcing – Research and adaptation – Exposure to new ideas to encourage originality of thought. Theme and Direction for Design Brief – Fabric theme. Colour story – Concept and direction – Formulation of design brief. Knowledge of fashion trends and designers who set them.	[9]
Development of Mood Boards and Story Boards Creation of concept boards – mood boards and illustration boards – Methods of displaying the fashion collection – Techniques of presentation for selection. Visualization and Communication – Idea sheets, Organization of illustrated designs into group/story presentation drawings/illustrations – Production of drawings for sample development.	[9]
Fabric Sourcing and Pattern Development Fabric selection – Sourcing of fabrics available in the market place – Analysis of functional and aesthetic characteristics of fabrics. Selection of fabric for different end uses. Realization – Pattern construction and development – Toile preparation – Making-up and Finishing process of Prototypes – Consolidation of collection for realization and presentation – From Toiles to Actual Garments.	[9]
Pattern Adaptation and Prototype Preparation* Pattern adaptation and development – Making-up process – Fitting on work stand. Modification for material and production constraints – Co-ordination with Accessories – Selection of accessories for co-ordination – Use of accessories to enhance the total look.	[9]
Garment Finishing and Presentation Actual garment construction steps, Fine tuning of the garment with relevant embellishments –Embroidery, Appliqué work, Patch work, Black work, Bead and Sequins work, Richelieu work, Reticella work, Cut work, Eyelet work, Badla work, Mirror work. Presentation of Portfolio (including costing) for garments with reference to occasions and necessary concepts, details.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Kathryn Mc Kelvey, Janine Munslow, “Fashion Design: Process, Innovation and Practice”, Black Well Science Publisher, UK, 2003.
References(s):	
1.	Linda Tain, Portfolio Presentation for Fashion Designers, Fairchild Books & Visuals, USA, 1998.
2.	Sharon L. Tate, Mona S. Edwards, “Inside Fashion Design”, Fifth edition, Prentice Hall, New Delhi,2003.
3.	Gavin Wadell, “How Fashion Works: Couture, Ready-to-Wear and Mass Production”, Blackwell Science Publisher, UK, 2004.

*SDG 9 – Industry Innovation and Infrastructure

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Concept and Theme Development**	
1.1	Inspiration and idea sourcing	1
1.2	Research and adaptation	1
1.3	Theme and direction for design brief	1
1.4	Fabric and color story	2
1.5	Formulation of design brief	2
1.6	Exposure to fashion trends and key designers	2
2.0	**Development of Mood Boards and Story Boards**	
2.1	Creation of concept and mood boards	2
2.2	Illustration boards and methods of display	2
2.3	Visualization and communication	1
2.4	Organization of illustrated designs	1
2.5	Production of drawings for sample development	1
2.6	Techniques of presentation for selection	2
3.0	**Fabric Sourcing and Pattern Development**	
3.1	Fabric selection and sourcing	2
3.2	Analysis of fabric characteristics	2
3.3	Pattern construction and development	1
3.4	Toile preparation and prototype finishing	1
3.5	Consolidation of collection for presentation	2
3.6	From Toiles to actual garments	1
4.0	**Pattern Adaptation and Prototype Preparation**	
4.1	Pattern adaptation and development	2
4.2	Fitting and modifications for constraints	2
4.3	Co-ordination with accessories	2
4.4	Selection of accessories to enhance look	1
4.5	Integration of design elements and feedback	1
4.6	Final adjustments and preparation for display	1
5.0	**Garment Finishing and Presentation**	
5.1	Construction steps and fine tuning	2
5.2	Embellishment techniques	2
5.3	Preparation of portfolio including costing	1
5.4	Garment presentation for various occasions	1
5.5	Review of completed garments and portfolio	1
5.6	Final presentation and critique	2

Course Designer(s)

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

Passed in BoS Meeting held on 22/12/2022 **BoS Chairman**
Approved in Academic Council Meeting held on 07/01/2023

K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215
(An Autonomous Institution affiliated to Anna University)

COURSES OF STUDY

(For the candidates admitted in 2023-2024)

SEMESTER VIII

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
PRACTICALS								
1.	60 TT 8P1	Project Work Phase II	CG	16	-	-	16	8
2.	60 CG 0P6	Internship	CG	-	-	-	-	1/2/3*
				16	**-**	**-**	**16**	**8**

Internship* additional credits is offered based on the duration

K.S.RANGASAMY COLLEGE OF TECHNOLOGY, TIRUCHENGODE - 637215
(An Autonomous Institution affiliated to Anna University)

B.E. / B.Tech. Degree Programme

SCHEME OF EXAMINATIONS
(For the candidates admitted in 2023-2024)

EIGHTH SEMESTER

.No.	Course Code	Name of the Course	Duration of Internal Exam	Weightage of Marks			Minimum Marks for Pass in End Semester Exam	
				Continuous Assessment *	End Semester Exam **	Max. Marks	End Semester Exam	Total
THEORY								
1	60 TT 8P1	Project Work Phase II	3	60	40	100	45	100
2.	60 CG 0P6	Internship	3	100	-	100	-	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 40 marks for project End semester Examination

Passed in BoS Meeting held on 21/05/2024
Approved in Academic Council Meeting held on 25/05/2024

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

60 TT 8P1	PROJECT WORK PHASE II	Category	L	T	P	Credit
		CG	-	-	16	8

Objectives

- To make the student understand the practical problem solving process in the industry

Pre-requisites

- Nil

Course Outcomes

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

CO1	Identify engineering problems relevant to the domain and collect literature survey for its support	Analyse
CO2	Analyse and identify an appropriate technique to solve the problem	Analyse
CO3	Do experimentation / fabrication, collect and interpret the data obtained	Apply
CO4	Document, prepare the project report and do the presentation	Apply
CO5	Demonstrate their responsibility as an individual and a leader in group project work	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	2	3	2	-	-	2	2	2	-	2	3	2	-
CO2	3	3	2	3	2	-	-	2	2	2	-	2	3	2	-
CO3	3	3	2	3	2	-	-	2	2	2	-	2	3	2	-
CO4	3	3	2	3	2	-	-	2	2	2	-	2	3	2	-
CO5	3	3	2	3	2	-	-	2	2	2	-	2	3	2	-
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Internal Assessment (60) (Internal Assessment: 60 Marks + End Semester Examination: 40 Marks)					End Semester (40)
Items	Review 1	Review 2	Review 3	Publication*	
Marks	5	10	15	30	40
	Total internal marks(60)				

Note:

Publication marks shall be awarded based on the following criteria:

1. SCI / WoS Journal = 30 Marks
2. Scopus Indexed Journal / Scopus Indexed Book Chapters / IEEE Conference = 27 Marks
3. Journals listed in UGC Care = 25 Marks

Passed in BoS Meeting held on 21/05/2024
Approved in Academic Council Meeting held on 25/05/2024

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								
B.Tech. Textile Technology								
60 TT 8P1 – Project Work Phase II								
Semester	**Hours/Week**			**Total Hrs**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
VIII	-	-	16	240	8	60	40	100

The student can undertake the project work individually or in a group not exceeding three students. The work has to be carried out in the college / institute. The works to be undertaken during this phase II is given below:

I. Demonstrate and present their entire project work with results and discussions in Review 0

II. Submit first draft of research paper/patent/demo the mobile app development in Review I

III. Show the evidence of paper submission in journal / filed a patent / demo in the play store for mobile app development in Review II

IV. Complete project report, paper publication in journals / status of patent / Availability of app in play store in Review III

V. Complete all works before the last instruction day of that particular semester

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

Course Designer(s)

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

Passed in BoS Meeting held on 21/05/2024
Approved in Academic Council Meeting held on 25/05/2024

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

60 TT L01	Fibre Science and Technology	Category	L	T	P	Credit
		OE	3	0	0	3

Objectives

- To impart knowledge on the basic textile terms.
- To impart knowledge on the production of natural, fibres.
- To impart knowledge on the production of synthetic and regenerated fibres.
- To impart knowledge on applications and properties of natural and synthetic fibres.
- To impart knowledge on applications and properties of regenerated cellulosic fibres

Pre-requisites

- Nil

Course Outcomes

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

CO1	Classify the textile fibres and its identification.	Understand
CO2	Summarize the cultivation / extraction process, properties and applications of cellulosic fibres	Understand
CO3	Explain the production, properties and applications of manmade regenerated cellulosic fibres.	Understand
CO4	Summarize the production, properties and applications of protein fibres.	Understand
CO5	Describe the production, properties and applications of synthetic fibres.	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2	-	-	-	-	-	-	-	-	-	-	-	2	-
CO2	3	1	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	2	3	-	-	-	-	-	-	-	-	-	-	-	-	2
CO5	2	2	-	-	-	-	-	-	-	-	-	1	-	-	1

3 - Strong; 2 - Medium; 1 - Some

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	1	2		
Remember	30	30	40	40
Understand	30	30	60	60
Apply	-	-	-	-
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create				
Total	60	60	100	100

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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.Rangasamy College of Technology – Autonomous R2022								
B.Tech. – Textile Technology								
60 TT L01 - Fibre Science and Technology								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	3	0	0	45	3	40	60	100

Introduction * Definitions–Fibre: Textile fibre, staple fibre, filament; Yarn: Spun, Continuous filament, Monofilament and Multifilament; Fabric: Woven, Knitted and Non-woven. Classification of textile fibres with examples. Essential and desirable properties of textile fibres. Standard moisture regain of common fibres. Identification of textile fibres by Microscopic test, burning test and solubility test.	[9]
Cellulosic Fibres * Cultivation, properties and applications of cotton; Extraction, properties and application of flax and jute. Study of morphological and chemical structure of natural cellulosic fibres.	[9]
Man made Regenerated Cellulosic Fibers ** Production process, properties and applications of viscose rayon, modal, lyocell and bamboo fibres; Study of morphological and chemical structure of regenerated cellulosic fibres.	[9]
Protein Fibers * Morphological structure and chemical constitution of wool and silk. Types, production process, properties and applications of wool and silk fibres.	[9]
Synthetic Fibers ** Production, properties and applications of Polyester, Nylon and Polypropylene. Study of morphological and chemical structures of synthetic fibers. Study of properties of .high performance fibers, - Kevlar, Nomex, Carbon and glass fibers.	[9]
Total Hours:	**45**

Text Book(s):	
1.	S.P.Mishra, "A Text book of Fibre science and Technology", New Age International Publishers, New Delhi. ISBN:8122412505.
2.	H.V.Srinivasamoorthy, "Introduction to Textile Fibres", Revised Edition, Wood head Publishing India ISBN: 9385059572.
Reference(s):	
1.	E.P.G.Gohl and L.D.Vilensky, "Textile Science", CBS Publishers and Distributors, New Delhi.
2.	Cook, J. Gordon, "Hand Book of Textile Fibres: Man-Made Fibres", Vol. 1 and 2, Merrow Publishing Co. Ltd.,England.
3.	Morton W.E and Hearle J.W.S, "Physical properties of textile fibres", Textile Institute, Manchester.
4.	S.Eichhorn, J.W. S. Hearle, et al.", "Handbook of Textile Fibre Structure, Volume 1" Wood head Publishing, 2009.

*****SDG: 15 Life on Land

**SDG: 9 Industry, Innovation and Infrastructure

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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

Course Contents and Lecture Schedule

S. No.	Topics	No. of hours
1.0	**Introduction**	
1.1	Definitions–Fibre: Textile fibre, staple fibre, filament; Yarn: Spun, Continuous filament, Monofilament and Multifilament; Fabric: Woven, Knitted and Non-woven.	2
1.2	Classification of textile fibres with examples.	2
1.3	Essential and desirable properties of textile fibres	2
1.4	Standard moisture regain of common fibres	1
1.5	Identification of textile fibres by Microscopic test, burning test and solubility test.	1
2.0	**Cellulosic Fibres**	
2.1	Cultivation, properties and applications of cotton	2
2.2	Extraction, properties and application of flax	2
2.3	, Extraction, properties and application of Jute	2
2.4	Study of morphological structure of natural cellulosic fibres.	1
2.5	Study of chemical structure of natural cellulosic fibres.	1
3.0	**Man made Regenerated Cellulosic Fibres**	
3.1	Production process, properties and applications of viscose rayon fibre	2
3.2	Production process, properties and applications of modal fibre	2
3.3	Production process, properties and applications of lyocell fibre	2
3.4	Production process, properties and applications of bamboo fibre	2
3.5	Study of morphological structure of regenerated cellulosic fibres.	1
3.6	Study of chemical structure of regenerated cellulosic fibres.	1
4.0	**Protein Fibres**	
4.1	Morphological structure of wool fibre	1
4.2	Chemical constitution of wool fibre	1
4.3	Morphological structure of silk fibre	1
4.4	Chemical constitution of silk fibre	2
4.5	Types, production process, properties and applications of wool fibres	2
4.6	Types, production process, properties and applications of silk fibres	2
5.0	**Synthetic Fibres**	
5.1	Production, properties and applications of Polyester	1
5.2	Production, properties and applications of nylon	2
5.3	Production, properties and applications of polypropylene	2
5.4	. Study of properties of kevlar,Nomex fibres ,	2
5.5	Study of properties of carbon and glass fibres ,	1
5.6	Study of morphological and chemical structures of synthetic fibres	2
5.7	Production, properties and applications of Polyester	1
5.8	Production, properties and applications of nylon	2

Course Designer(s)

1. Mr.G.Devanand - devanandg@ksrct.ac.in

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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

60 TT L02	Basics of Textile Technology	Category	L	T	P	Credit
		OE	3	0	0	3

Objectives

- To enable the students to learn about the basics of textile fibers and yarn production.
- To enable the students to learn about the basic mechanisms involved in fabric production.
- To enable the students to learn about the basics of knitted and non-woven fabrics
- To enable the students to learn about the coloration of fabrics.
- To enable the students to learn about the basics of garment manufacturing.

Pre-requisites

Course Outcomes

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

CO1	Classify the textile fibres and explain the functioning of spinning machine	Understand
CO2	Explain the functioning of weaving machine	Understand
CO3	Summarize the non-woven and knitted fabric types and process	Understand
CO4	Discuss the wet process sequences for various fabrics and summarize the pre-treatment processes	Understand
CO5	Elucidate the basics of garment preparatory and garment manufacturing process	Understand

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	1	2	1					2	2	2	3	2	1
CO2	3	2	1	2	1					2	2	2	3	2	1
CO3	3	2	1	2	1					2	2	2	3	2	1
CO4	3	2	1	2	1					2	2	2	3	2	1
CO5	3	2	1	2	2					2	2	2	3	2	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	1	2		
Remember	20	20	34	34
Understand	40	40	66	66
Apply	-	-	-	-
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-
Total	60	60	100	100

Passed in BoS Meeting held on 12/05/2023
Approved in Academic 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.Rangasamy College of Technology – Autonomous R2022								
B.Tech – Textile Technology								
60 TT L02 - Basics of Textile Technology								
Semester	**Hours/Week**			**Total Hours**	**Credit**	**Maximum Marks**		
	L	T	P		C	CA	ES	Total
IV	3	0	0	45	3	40	60	100

Basics of Fibre Science and Spinning Definition of fibre, classification of textile fibers; essential fibre properties; sequence of machineries in short staple yarn spinning from ginning to cone winding and their objectives; yarn numbering systems; essential yarn properties.	[9]
Basics of Woven Fabric Production Woven fabric – warp, weft, weaving, path of warp; looms – classification, handloom, power loom, automatic looms,shuttleless looms, special type of looms; preparatory machines for weaving process and their objectives; basic weaving mechanism - primary, secondary and auxiliary mechanisms; essential fabric properties.	[9]
Basics of Knitted and Non-Woven Fabric Production Knitting – classification, warp and weft knitting principles, properties of fabrics; nonwoven process –classification, principle, types of fabrics. End uses.	[9]
Basics of Chemical Processing* Objectives of the processes - singeing, de-sizing, scouring, bleaching, mercerization; dyeing - classification of dyes, methods and types of dyeing; printing - types and styles of printing.	[9]
Basics of Garment Manufacturing Fabric sourcing; Basic principles of pattern making and grading, marker planning, laying, cutting, sorting, sewing, finishing and packing.	[9]
Total Hours:	**45**

Text Book(s):	
1.	Hornberer M., Eberle H., Kilgus R., Ring W. and Hermeling H., "Clothing Technology: From Fibre to Fabric", Europa Lehrmittel Verlag, 2008, ISBN: 3808562250 / ISBN: 978-3808562253.
2.	Wynne A., "Motivate Series-Textiles", Maxmillan Publications, London, 1997
	Carr H. and Latham B., "The Technology of Clothing Manufacture" Blackwell Science, U.K., 1994, ISBN: 0632037482 / ISBN:13: 9780632037483
Reference(s):	
1.	Banerjee N. N., "Weaving Mechanism", Textile Book House, ISBN: B001A1S41A, 1986.
2.	Marks R. and Robinson T. C., "Principles of Weaving", The Textile Institute, Manchester,1989, ISBN: 0900739258
3.	Oxtoby E., "Spun Yarn Technology ", Butterworth, London, 1987, ISBN: 1483129381 / ISBN: 9781483129389.
	Trotman E. R., "Dyeing and Chemical Technology of Textile Fibres", B.I Publishing Pvt. Ltd., New Delhi, 1994, ISBN: 0471809101 / ISBN: 9780471809104.

*SDG 6: Ensure availability and sustainable management of water and sanitation for all

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Course Contents and Lecture Schedule		
S. No.	**Topic**	**No. of hours**
1.0	Basics of Fibre Science and Spinning	
1.1	Introduction to textile fibers: Definition, classification, and essential properties.	1
1.2	Sequence of machineries in short staple yarn spinning from ginning to cone winding.	1
1.3	Detailed study of each machinery involved in spinning - Objectives and functioning.	1
1.4	Yarn numbering systems - Direct and indirect systems.	1
1.5	Essential yarn properties - Strength, elasticity, fineness.	1
1.6	Continuation of yarn properties - Evenness, hairiness, and twist.	1
	Hands-on demonstration or virtual demonstration of spinning machineries.	1
	Summary, revision, and quiz/assignment discussion.	2
2.0	Basics of Woven Fabric Production	
2.1	Introduction to woven fabric - Warp, weft, and basic weaving concepts.	1
2.2	Classification of looms - Handloom, power loom, automatic, shuttleless, and special types.	2
2.3	Preparatory machines for weaving - Objectives and their roles.	2
2.4	Primary weaving mechanisms - Shedding, picking, and beating-up.	1
2.5	Secondary and auxiliary weaving mechanisms - Take-up, let-off, warp stop motion, and weft stop motion.	2
2.6	Essential fabric properties - Strength, drape, and aesthetics.	1
3.0	Basics of Knitted and Non-Woven Fabric Production	
3.1	Introduction to knitting - Warp and weft knitting principles.	1
3.2	Classification of knitting machines - Circular, flatbed, and raschel knitting.	2
3.3	Properties of knitted fabrics - Stretch, comfort, and breathability.	1
3.4	Non-woven fabrics - Introduction, classification, and manufacturing principles.	1
3.5	Types of non-woven fabrics - Spunbond, meltblown, needle-punched.	2
3.6	End uses of non-woven fabrics - Medical, automotive, and filtration.	1
3.7	Summary, revision, and quiz/assignment discussion.	1
4.0	Basics of Chemical Processing	
4.1	Objectives of chemical processing - Singeing, de-sizing, scouring.	1
4.2	Detailed process of bleaching and mercerization.	2
4.3	Dyeing - Classification of dyes, methods, and types.	1
4.4	Techniques and equipment used in the dyeing process.	2
4.5	Introduction to textile printing - Types, styles, and techniques (Block, screen, rotary, transfer).	2
4.6	Summary, revision, and discussion on SDG 6 - Water management in textile processing.	1
5.0	Basics of Garment Manufacturing	
5.1	Introduction to garment manufacturing - Fabric sourcing, principles of pattern making.	1
5.2	Marker planning, laying, and cutting processes.	1
5.3	Sorting, sewing, and finishing operations.	1
5.4	Garment packing and quality control - Standards and best practices.	2
5.5	Pattern grading techniques - Basic principles and applications.	2
5.6	Summary, revision, and final quiz/assignment on Garment Manufacturing.	2
Course Designer(s)		
1. A.S. Subburaayasaran – subburaayasaran@ksrct.ac.in		

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60 TT L 03	Introduction to Fashion Design	Category	L	T	P	Credit
		OE	3	0	0	3

Objectives

- Study the history and theories of fashion movement and fashion cycle
- Learn the significance of clothing in different cultural and social contexts
- Apply knowledge of fashion and clothing in personal wardrobe planning
- Utilize elements and principles of design in creating aesthetically pleasing outfits
- Develop skills in portfolio presentation and organizing fashion shows

Pre-requisites

Basic knowledge about woven and knitted fabrics

Course Outcomes

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

CO1	Analyse reasons for changes in fashion, classifying styles, trends, and fads	Analyse
CO2	Understand the cultural aspects and societal roles of clothing	Understand
CO3	Develop skills in selecting appropriate clothing for different age groups and occasions	Understand
CO4	Mastery of Design Elements and Principles	Understand
CO5	Create designer boards: Develop fashion illustration skills and portfolio presentation	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	1			2			1	2	2	1	2	2	
CO2	2	2	1			2			2	1	2	3	2	2	
CO3	3	2	2			2			2	2	2	2	2	2	
CO4	3	2	2			2			2	1	2	1	2	2	
CO5	2	2	2			2			3	3	2	2	2	2	
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	1	2		
Remember	20	30	34	34
Understand	10	30	20	20
Apply	10	-	26	26
Analyse	20	-	20	20
Evaluate	-	-	-	-
Create	-	-	-	-
Total	60	60	100	100

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K S Rangasamy College of Technology
TIRUCHENGODE-637 215

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech – Textile Technology

60 TT L 03 - Introduction to Fashion Design

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
V	3	0	0	45	3	40	60	100

Introduction to Fashion Origin of fashion - terms and definitions - reasons for change in fashion - classification of fashion – Style, Classic, FAD, Trend – theories of fashion – movement of fashion - fashion cycle.	[9]
Introduction to Clothing Understanding clothing - Purpose of clothing: protection, modesty, attraction etc - Importance of clothing - Clothing Culture, Men and Women clothing and ornamentation - Role and status of clothing - Clothing according to climatic conditions – factors to be considered in the selection of clothing.	[9]
Wardrobe planning Selection of clothes - Clothes for children, middle-aged and adults. Types of clothes according to different types of human figure, Different materials for different clothes, Fabrics and colors suitable for different garments. Planning for clothing needs: Formal clothing, Clothes for parties, Clothes for sports, Casual Clothes for casual wear. Wardrobe Planning: Wardrobe for men and women	[9]
Elements and Principle of Design Elements of Design: Introduction on basics Elements of design - Silhouette, Details, Texture, Color, Lines, Principle of design: Introduction to principles of Elements of design - Proportion, Balance, Rhythm, Center of Interest, Harmony	[9]
Design and Development Designer boards - Mood board, fabric board, colour board, accessory board. Fashion illustration – head theories, Illustration techniques – strokes, hatching, shading; Colouring techniques – Medias for colouring. Portfolio presentation – styles of presentation - Fashion shows.	[9]
Total Hours:	**45**

Text Book(s):

1.	Munslow, Janine, McKelvey, Kathryn “Fashion Design Process Innovation and Practice”, 2nd Edition, wiley, 2012.
2.	Amaden-Crawford, C. “A Guide to Fashion Sewing - With Studio” . Bloomsbury Academic, USA, 2016

Reference(s):

1.	Jelka Gersak, “Design of Clothing Manufacturing Processes”, Elsevier Science & Technology, 2016
2.	Kathryn McKelvey “Fashion Source Book” Balckwell Publishing, New Delhi. 2012
3.	Jane Mills and Janet K.Smith “Design Concepts” Fairchild Publications, New York.2013

SDG 8- Decent work and Economic Growth
SDG 12- Responsible Consumption and Production

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Course Contents and Lecture Schedule		
S. No.	**Topic**	**No. of hours**
1.0	**Introduction to Fashion**	
1.1	Origin of fashion - terms and definitions	1
1.2	classification of fashion	1
1.3	Reasons for change in fashion	1
1.4	classification of fashion	2
1.5	Style, Classic, FAD, Trend – theories of fashion	1
1.6	movement of fashion - fashion cycle.	2
2.0	**Introduction to Clothing**	
2.1	Understanding clothing Importance	2
2.2	Purpose of clothing: protection, modesty, attraction etc -	2
2.3	Clothing Culture, Men and Women clothing and ornamentation	2
2.4	Role and status of clothing	1
2.5	Clothing according to climatic conditions	1
2.6	clothing factors to be considered in the selection of clothing.	1
3.0	**Wardrobe planning**	
3.1	Selection of clothes - Clothes for children, middle-aged and adults., Fabrics and colours suitable for different garments	3
3.2	Types of clothes according to different types of human figure	1
3.3	Different materials for different clothes,	2
3.4	Planning for clothing needs: Formal clothing, Clothes for parties, Clothes for sports, Casual Clothes for casualwear. Wardrobe Planning	2
3.5	Wardrobe for men and women	1
4.0	**Elements and Principle of Design**	
4.1	Elements of Design Introduction	2
4.2	Introduction on basics Elements of design	2
4.3	Silhouette, Details, Texture, Color, Lines, Principle of design:	2
4.4	principles of Elements of design - Proportion, Balance, Rhythm, Center of Interest, Harmony	3
5.0	**Design and Development**	
5.1	Designer boards - Mood board, fabric board, colour board, accessory board	1
5.2	Fashion illustration	1
5.3	head theories	2
5.4	Illustration techniques – strokes, hatching, shading	1
5.5	Colouring techniques – Medias for colouring	2
5.6	Portfolio presentation – styles of presentation	1
5.7	Fashion shows	1
Course Designer(s)		
1. Dr. M.B. Sampath - sampath@ksrct.ac.in		

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TIRUCHENGODE-637 215

60 TT L04	Industrial Textiles	Category	L	T	P	Credit
		OE	3	0	0	3

Objectives

- To impart the knowledge on various fibers used in Industrial textile
- To impart the knowledge on medical textiles
- Understand the basic knowledge on geo and agro textiles
- To impart the knowledge on protective and smart textiles
- Understand the industrial application of textiles

Pre-requisites

- **Nil**

Course Outcomes

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

CO1	Explain the scope, classification & application of industrial textiles	Understand
CO2	Conclude the role of textile materials in the medical textile's product development.	Remember
CO3	Describe the properties required to use in Agro textiles & Geo textiles and the application of Geo & Agro textiles.	Understand
CO4	Summarize the functions & applications of protective & smart textiles.	Remember
CO5	Outline the miscellaneous & Industrial applications of textile products	Apply

Mapping with Programme Outcomes

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2	2		1	3	2		3	3			3	3	1
CO2	2	3	2			3	3		3	1			3	3	1
CO3	2	1	3	2	1	3	3		3	1		1	3	3	1
CO4	3		3	3		3	3		3	1		1	3	3	1
CO5	2		3	3		3	3		3	1		1	3	3	1
3 - Strong; 2 - Medium; 1 - Some															

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		Model Examination (Marks)	End Sem Examination (Marks)
	1	2		
Remember	20	20	34	34
Understand	40	40	20	20
Apply	-	-	46	46
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-
Total	60	60	100	100

Passed in BoS Meeting held on 12/05/2023
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K S Rangasamy College of Technology
TIRUCHENGODE-637 215

Syllabus

K.S.Rangasamy College of Technology – Autonomous R2022

B.Tech – Textile Technology

60 TT L04 - Industrial Textiles

Semester	Hours/Week			Total Hours	Credit	Maximum Marks		
	L	T	P		C	CA	ES	Total
V	3	0	0	45	3	40	60	100

Introduction of Industrial Textile Industrial Textiles: Introduction - Definition, Scope of Industrial textiles, Classification & Application of Industrial textiles. Fibres – Conventional Fibres, High-Performance fibres, Ultrafine and Novelty fibres.	[9]
Medical Textiles Medical Textiles: Introduction, Materials used & its requirements. Classification of Medical Textiles - Textiles for implantations, Non-implantation textiles, Extra-corporeal devices, Healthcare & Hygiene Products.	[9]
Geo & Agro Textiles Geo Textiles: Geotextile, Geosynthetics, Fibres and its selection for Geo textiles, Functions of Geotextiles, Engineering properties of Geotextiles, Geotextile structure, Applications for natural Geotextiles. Agro Textiles - Textiles in Agriculture - Fibres details & Properties, Applications of Agro textiles	[9]
Protective & Smart Textiles* Protective Textiles: Selection of protective clothing materials, fibres and fabrics for Protective Textiles, Textiles for environmental protection; Thermal insulation materials; Cold weather clothing, Nuclear protective fabrics. Smart Textiles: Role of smart materials in textiles, Shape Memory Fibres, Shape Memory Material, Concepts associated with shape memory materials	[9]
Industrial Applications of Textiles Textiles in Electronics, Textiles in Automotives, Textile reinforcement products, Textiles for Banners and Flags, Canvas Covers and Tarpaulins, Ropes and Nets, Home and Office Furnishings, and Textiles in Sportswear – Athleisure wear	[9]
Total Hours:	**45**

Text Book(s):	
1.	A.R.Horrocks & S.C. Anand (Edrs.), Handbook of Technical Textiles, The Textile Institute, Manchester, U.K., Woodhead Publishing Ltd., Cambridge, England, 2000.
2.	T.Matsuo, “Fiber materials for Advanced Technical Textiles”, CRC publication, 2008.
Reference(s):	
1.	N.W.M. John, “Geotextiles”, Blackie, London, ISBN: 0-216-91995-9, 1987.
2.	S. Adanur “Wellington Sears Handbook of Industrial Textiles”, Technomic Publishing Co. Inc., Lancaster, Pennylvania, ISBN: 1-56676-340-1, 1995.
3.	S. Anand, “Medical Textiles”, Text. Inst., 1996, ISBN: 185573317X.
4.	Richard. A.Scott, Textiles for Protection, CRC press, Woodhead Publication, USA, 2005.

*SDG 9: Innovations Industry And Infrastructure

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Course Contents and Lecture Schedule		
S. No.	**Topic**	**No. of hours**
1.0	**Industrial Textiles**	
1.1	Introduction to Industrial Textiles: Definition and Scope.	1
1.2	Classification and Applications of Industrial Textiles.	1
1.3	Conventional Fibres used in Industrial Textiles.	1
1.4	High-Performance Fibres in Industrial Textiles.	1
1.5	Ultrafine and Novelty Fibres in Industrial Textiles.	2
1.6	Summary and revision of Industrial Textiles.	2
1.7	Quiz/Assignment discussion on Industrial Textiles.	1
2	**Medical Textiles**	1
2.1	Introduction to Medical Textiles and Materials used.	2
2.2	Requirements for Materials used in Medical Textiles.	1
2.3	Classification of Medical Textiles: Textiles for Implantations.	2
2.4	Non-implantation Textiles and Extra-corporeal Devices.	1
2.5	Healthcare & Hygiene Products in Medical Textiles.	2
2.6	Summary and revision of Medical Textiles.	1
3.0	**Geo & Agro Textiles**	
3.1	Introduction to Geo Textiles: Definition and Scope.	1
3.2	Classification of Geosynthetics and Fibre Selection.	2
3.3	Functions and Engineering Properties of Geotextiles.	1
3.4	Geotextile Structure and Applications of Natural Geotextiles.	1
3.5	Introduction to Agro Textiles and Fibre Properties.	1
3.6	Applications of Agro Textiles in Agriculture.	3
4.0	**Protective & Smart Textiles**	
4.1	Introduction to Protective Textiles: Selection of Materials.	1
4.2	Fibres and Fabrics for Protective Textiles.	1
4.3	Textiles for Environmental Protection and Thermal Insulation.	1
4.4	Cold Weather Clothing and Nuclear Protective Fabrics.	2
4.5	Introduction to Smart Textiles: Role of Smart Materials.	2
4.6	Shape Memory Fibres and Shape Memory Materials in Textiles.	2
5.0	**Industrial Applications of Textiles**	
5.1	Textiles in Electronics and Automotives.	1
5.2	Textile Reinforcement Products.	2
5.3	Textiles for Banners, Flags, and Canvas Covers.	1
5.4	Ropes, Nets, and Tarpaulins.	1
5.5	Home and Office Furnishings.	2
5.6	Textiles in Sportswear – Athleisure Wear.	2
Course Designer(s)		
1. Dr. K. Saravanan – Saravanan.k@ksrct.ac.in		

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