

SONA COLLEGE OF TECHNOLOGY, SALEM-5

(An Autonomous Institution)

B.Tech-Fashion Technology

CURRICULUM and SYLLABI

[For students admitted in 2019-2020]

B.E / B.Tech Regulation 2019

Approved by BOS and Academic Council meetings

Sona College of Technology, Salem
(An Autonomous Institution)

Courses of Study for B.E./B.Tech. Semester I under Regulations 2019 (CBCS)

Branch: Fashion Technology

S.No.	Course Code	Course Title	L	T	P	C	Category
Theory							
1.	U19ENG101D	English for Engineers - I	2	0	0	2	HS
2.	U19MAT102C	Calculus and Statistics	3	1	0	4	BS
3.	U19PHY103D	Engineering Physics - I	3	0	0	3	BS
4.	U19CHE104F	Chemistry for Textile Technologists - I	3	0	0	3	BS
5.	U19FTY107	Textile Science: Fibres and Yarns	3	0	0	3	PC
Practical							
6.	U19PCL108B	Physics and Chemistry Laboratory [#]	0	0	2	1	BS
7.	U19FTL116	Fibre and Yarn Analytical Laboratory	0	0	2	1	PC
8.	U19CFTL117	Computer basics for Fashion Technology Laboratory	0	0	2	1	PC
9.	U19GE101	Basic Aptitude - I	0	0	2	0	EEC
Total Credits						18	
Optional Language Elective*							
10.	U19OLE1101	French	0	0	2	1	HS
11.	U19OLE1102	German					
12.	U19OLE1103	Japanese					

*Students may opt for foreign languages viz., German/French/Japanese with additional one credit (Not accounted for CGPA calculation)


[#] Laboratory classes on alternative weeks for Physics and Chemistry. The lab examination will be conducted separately for 50 marks each with 2 hours duration.

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester II under Regulations 2019 (CBCS)
Branch: Fashion Technology

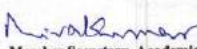
S.No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Category
Theory							
1	U19MAT202E	Probability and Statistical Quality Control	3	1	0	4	BS
2	U19PHY203E	Engineering Physics - II	3	0	0	3	BS
3	U19CHE204C	Chemistry for Textile Technologists - II	3	0	0	3	BS
4	U19BEE206	Basics of Mechanical and Electrical Engineering	3	0	0	3	ES
5	U19FT201	Woven Fabric Manufacture and Structure	3	0	0	3	PC
6	U19EGR206B	Engineering Graphics for Fashion Designing	1	0	2	2	ES
Practical							
7	U19ENL215	English for Engineers - II	0	0	2	1	HS
8	U19FT202	Woven Fabric Structure and Textile CAD Laboratory	0	0	2	1	PC
9	U19GE201	Basic Aptitude - II	0	0	2	0	EEC
Total Credits						20	
Optional Language Elective*							
10	U19OLE1201	French	0	0	2	1	HS
11	U19OLE1202	German					
12	U19OLE1203	Japanese					

*Students may opt for foreign languages viz., German/French/Japanese with additional one credit (Not accounted for CGPA calculation)

Approved By


Chairperson, Science and Humanities BoS
Dr.M.Renuga


Chairperson, Fashion Technology BoS
Dr.D.Raja


Member Secretary, Academic Council
Dr.R.Shrivakumar


Chairperson, Academic Council & Principal
Dr.S.R.R.Senthil Kumar

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B.E/B.Tech Regulations-2019

Sona College of Technology, Salem
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Courses of Study for B.E/B.Tech. Semester III under Regulations 2019
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	U19MAT301E	Operations Research and Statistical Methods	3	1	0	4
2	U19FT301	Knitted Fabric Manufacture and Structure (lab integrated)	3	0	2	4
3	U19FT302	Chemical Processing of Textiles and Garments (Lab Integrated)	3	0	2	4
4	U19FT303	Fashion Art and Design	3	0	0	3
5	U19FT304	Pattern Making and Garment Construction - I	3	0	0	3
6	U19GE304	Mandatory Course : Constitution of India	2	0	0	0
Practical						
7	U19FT305	Pattern Making and Garment Construction Laboratory - I	0	0	2	1
8	U19FT306	Digital Fashion Design Laboratory	0	0	4	2
9	U19ENG301	Communication Skills Laboratory	0	0	2	1
10	U19GE301	Soft Skills and Aptitude – I	0	0	2	1
Total Credits						23

Approved By

Chairman, Fashion Technology BoS
Dr.D.Raja

Member Secretary, Academic Council
Dr.R.Shivakumar

Chairperson, Academic Council & Principal
Dr.S.R.R.Senthil Kumar

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Courses of Study for B.E/B.Tech. Semester IV under Regulations 2019
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	U19GE402	Mandatory Course: Environment and Climate Science	2	0	0	0
2	U19FT401	Pattern Making and Garment Construction - II	3	0	0	3
3	U19FT402	Garment Production Machinery and Equipment (Lab Integrated)	3	0	2	4
4	U19FT403	Problem Solving using Python Programming (Lab Integrated)	3	0	2	4
5	U19FT404	Textile and Apparel Quality Evaluation	3	0	0	3
6	U19FT405	Textile Materials for Fashion Design	3	0	0	3
Practical						
7	U19FT406	Pattern Making and Garment Construction Laboratory – II	0	0	2	1
8	U19FT407	Textile and Apparel Quality Evaluation laboratory	0	0	2	1
9	U19GE401	Soft Skills and Aptitude – II	0	0	2	1
10	U19FT408	Mini Project - I	0	0	2	1
11	U19FT409	In-Plant Training	2 Weeks			1
Total Credits						22

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Sona College of Technology, Salem
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Courses of Study for B.E/B.Tech. Semester V Regulations 2019
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Theory							
1	U19FT501	Apparel Manufacturing	3	0	0	3	45
2	U19FT502	Apparel Production Planning and Control	3	0	0	3	45
3	U19FT503	Apparel Merchandising (Lab Integrated)	3	0	2	4	75
4	U19FT504	Functional Garments	3	0	0	3	45
5	noc21-mg88	Elective- (NPTEL) - Principles of management	3	0	0	3	12 weeks
6	U19FT910	Elective – Home Textiles	3	0	0	3	45
Practical							
7	U19FT505	Apparel Manufacturing Laboratory	0	0	2	1	30
8	U19FT506	Digital Pattern Development and Marker Planning Laboratory	0	0	2	1	30
9	U19GE501	Soft Skills and Aptitude – III	0	0	2	1	30
10	U19FT507	Mini Project-II	0	0	2	1	30
11	U19FT508	In-Plant Training	2 Weeks			1	2 weeks
Total Credits						24	

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Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester VI Regulations 2019
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Theory							
1	U19FT601	Clothing Size, Fit and Comfort	3	0	0	3	45
2	U19FT602	Fashion Visual Merchandising	3	0	0	3	45
3	U19FT603	Industrial Engineering in Garment Production	3	0	0	3	45
4	U19FT911	Elective -Fashion Forecasting	3	0	0	3	45
	U19FT915	Elective -Wearable Technology					
5	U19FT918	Elective -Apparel and Fashion Marketing	3	0	0	3	45
	U19FT919	Elective -Fashion Retail Store Operations					
Open Elective							
6	U19BM1001	Hospital Management	3	0	0	3	45
	U19CE1001	Building Services and Safety Regulations					
	U19CE1003	Energy Efficiency and Green Building					
	U19CS1002	Cloud Computing					
	U19CS1004	Mobile Application Development					
	U19EC1003	Sensors and Smart Structures Technologies					
	U19EC1006	Mobile Technology and its Applications					
	U19EE1003	Innovation, IPR and Entrepreneurship Development					
	U19EE1004	Renewable Energy Systems					
U19IT1001	Problem Solving Techniques using Java Programming						

Practical							
7	U19FT604	3D Virtual Fit analysis Laboratory	0	0	2	1	30
8	U19FT605	Industrial Engineering in Garment Production Laboratory	0	0	2	1	30
9	U19GE601	Soft Skills and Aptitude – IV	0	0	2	1	30
10	U19FT606	Mini Project - III	0	0	2	1	30
Total Credits						22	

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Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester VII under Regulations 2019
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Theory							
1	U19GE701	Professional Ethics and Human Values	3	0	0	3	45
2	U19FT701	Retail Management	3	0	0	3	45
3	U19FT921	Professional Elective - Fashion Photography	3	0	0	3	45
	U19FT924	Professional Elective - Luxury Brand Management					
4	U19FT926	Professional Elective - Fashion Styling	3	0	0	3	45
	U19FT927	Professional Elective - Entrepreneurship Development and Management of Apparel Industry					
5	U19CE1004	Open Elective - Disaster Management	3	0	0	3	45
	U19CS1001	Open Elective - Big Data Analytics					
	U19CS1003	Open Elective - Internet of Things					
	U19CS1004	Open Elective -Mobile Application Development					
	U19CS1006	Open Elective - Data Science					
	U19EC1001	Open Elective -Biomedical Instrumentation and Measurements					
	U19EC1002	Open Elective - Embedded and Real Time Systems					
	U19EC1003	Open Elective - Sensors and Smart Structures Technologies					
	U19EE1002	Open Elective -Energy Conservation and Management					
	U19EE1003	Open Elective - Innovation, IPR and Entrepreneurship Development					
	U19EE1004	Open Elective - Renewable Energy Systems					
U19EE1005	Open Elective - Electrification in Building Construction						
U19MC1004	Open Elective - Fundamentals of Robotics						

Practical							
6	U19FT702	Fashion Portfolio and Product Development Laboratory	0	0	4	2	60
7	U19FT703	Accessory Design and Embellishment Laboratory	0	0	2	1	30
8	U19FT704	Draping Technique	0	0	2	1	30
9	U19FT705	Internship	0	0	4	2	4 weeks
10	U19FT706	Mini Project - IV	0	0	2	1	30
						Total Credits	22

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Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester VIII Regulations 2019
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Practical							
1	U19FT801	Project Work	0	0	24	12	360
Total Credits						12	

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HOD/Fashion Technology, Eighth Semester B.Tech FT Students and Staff, COE

Sona College of Technology, Salem
(An Autonomous Institution)

Courses of Study for B.E./B.Tech. Semester I under Regulations 2019 (CBCS)

Branch: Fashion Technology

S.No.	Course Code	Course Title	L	T	P	C	Category
Theory							
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2.	U19MAT102C	Calculus and Statistics	3	1	0	4	BS
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4.	U19CHE104F	Chemistry for Textile Technologists - I	3	0	0	3	BS
5.	U19FTY107	Textile Science: Fibres and Yarns	3	0	0	3	PC
Practical							
6.	U19PCL108B	Physics and Chemistry Laboratory [#]	0	0	2	1	BS
7.	U19FTL116	Fibre and Yarn Analytical Laboratory	0	0	2	1	PC
8.	U19CFTL117	Computer basics for Fashion Technology Laboratory	0	0	2	1	PC
9.	U19GE101	Basic Aptitude - I	0	0	2	0	EEC
Total Credits						18	
Optional Language Elective*							
10.	U19OLE1101	French	0	0	2	1	HS
11.	U19OLE1102	German					
12.	U19OLE1103	Japanese					

*Students may opt for foreign languages viz., German/French/Japanese with additional one credit (Not accounted for CGPA calculation)

[#] Laboratory classes on alternative weeks for Physics and Chemistry. The lab examination will be conducted separately for 50 marks each with 2 hours duration.

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**Dr.S.R.R.Senthil
Kumar**

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HOD/ Fashion Technology, First Semester BE FT Students and Staff, COE

U19ENG101D - ENGLISH FOR ENGINEERS – I

Common to FT

L T P C

2 0 0 2

Course Outcome: At the end of course, the students will be able to

1. Frame sentences correctly with accuracy.
2. Write emails and formal letters
3. Prepare reports and proposals
4. Draft memos for professional purposes
5. Recommend suggestions / solutions to problems, give instruction, make notes, prepare checklists

UNIT – I

- General Vocabulary- Parts of speech, Prefixes and Suffixes, Active and Passive voices
- Email - fixing an appointment, Cancelling appointments, conference details, hotel accommodation, order for equipment, training programme details, paper submission for seminars and conferences

UNIT – II

- Adjectives, comparative adjectives, Prepositions and dependent prepositions
- Letter Writing - Business communication, quotations, placing orders, complaints, replies to queries from business customers, inviting dignitaries, accepting and declining invitations
- Resume / CV

UNIT – III

- Tenses, Modal verbs and probability
- Proposal: establishing a lab, introducing a subject in the curriculum, training programme for students

UNIT – IV

- Concord, If conditionals, Collocations
- Technical report writing - feasibility reports, accident reports, survey reports

UNIT - V

- Cause and effect expressions, Pronouns, Adverbs
- Technical Writing: recommendations, checklists, instructions, note making and memo

TOTAL: 30 hours

TEXT BOOK

- Technical English I & II, Dr. M. Renuga et al. Sonaversity, 2016

U19MAT102C - CALCULUS AND STATISTICS

L	T	P	C
3	1	0	4

Course Outcomes: At the end of the course, the students will be able to

- apply the various differentiation techniques to the algebraic and transcendental functions
- apply the various integration techniques to the algebraic and transcendental functions
- represent the data in the form of diagram and graph and analyze them
- apply the concepts of measure of central tendency, dispersion and skewness to the given data and analyze the results
- apply the concepts of correlation and regression to the data and analyze the result.

UNIT I - DIFFERENTIAL CALCULUS

12

Ordinary Differentiation: Rules of differentiation – Derivatives of elementary functions – Differentiation of inverse functions – Logarithmic differentiation – Differentiation of implicit functions – Successive differentiation of simple functions.

Partial Differentiation: Total derivative – Euler's theorem – Differentiation of implicit functions.

UNIT II - INTEGRAL CALCULUS

12

Definite and indefinite integrals – Substitution rule – Integration by parts – Bernoulli's formula – Integration of rational functions by partial fraction – Double integral in Cartesian coordinates – Change of order of integration.

UNIT III - COLLECTION AND REPRESENTATION OF DATA

12

Collection of data – Primary and secondary data – Diagrammatic representation – Simple, subdivided, multiple and bar diagram – Pie diagram – Pictograph – Graphs of frequency distribution – Histogram – Frequency polygon – Frequency curve – Cumulative frequency curve.

UNIT IV - MEASURES OF CENTRAL TENDENCY, DISPERSION AND SKEWNESS **12**

Measure of central tendency (Simple arithmetic mean, median, mode) – Quartile's – Measure of dispersion (range, inter-quartile range, quartile deviation, mean deviation, standard deviation, coefficient of variation) – Skewness – Karl Pearson's coefficient of skewness.

UNIT V - CORRELATION AND REGRESSION **12**

Simple and rank correlations – Multiple and partial correlations – Linear regression – Multiple and partial regressions – Curve fitting (straight line and parabola).

Total: 60 Hours

TEXT BOOKS

1. S. Narayanan and T. K. Manicavachagom Pillay, "Calculus – volume I and II", S.Viswanathan Publishers, 2016.
2. S. P. Gupta, "Statistical Methods", Sultan Chand and Sons Publishers, 15th Edition, 2012.

REFERENCE BOOKS

1. J. Stewart, "Calculus", Cengage Publishers, 8th Edition, 2016.
2. G. B. Thomas, "Calculus", Pearson Publishers, 14th Edition, 2018.
3. S. C. Gupta and V. K. Kapoor, "Fundamentals of Mathematical Statistics", Sultan Chand and Sons Publishers, 11th Edition, Reprint, 2019.
4. R. A. Johnson and C. B. Gupta, "Miller and Freund's, Probability and Statistics for Engineers", Pearson Publishers, 9th Edition, 2018.
5. P. G. Hoel, S. C. Port and C. J. Stone, "Introduction to Probability Theory", Universal Book Stall Publishers, Reprint, 2003.

U19PHY103D - ENGINEERING PHYSICS - I
(For B.Tech. Fashion Technology)

L T P C
3 0 0 3

Course Outcomes: At the end of the course, the students will be able to,

- Discuss the dual nature of matter and radiation and the application of wave nature of particles.
- Describe the basic components of lasers.
- Analyse the relation between arrangement of atoms and material properties.
- Deduce Maxwell's equations using the fundamentals of electromagnetism.
- Elucidate the different modes of heat transfer.

UNIT I - QUANTUM PHYSICS

9

Origin of quantum mechanics – Limitations of classical theory - Dual nature of matter and radiation.

Particle nature of radiation - Compton effect - Explanation based on quantum theory - Expression for Compton shift (no derivation).

Wave nature of matter - de Broglie waves - Schrödinger's time independent and time dependent wave equations - Physical significance of wave function - Energy and wave function of an electron trapped in one dimensional box.

Application of wave nature of particles - Electron microscope - Comparison of optical and electron microscope - Scanning electron microscope - Limitations of electron microscope.

UNIT II - LASERS

9

Basic terms - Energy level - normal population - Stimulated absorption - population inversion - meta stable state - spontaneous emission - stimulated emission.

Basic components of a laser - Active medium - pumping technique - optical resonator
Einstein's theory - stimulated absorption - spontaneous emission and stimulated emission.

Types of lasers - Solid lasers (Nd:YAG) - Gas lasers (CO₂ laser) - semiconductor laser (homojunction and hetero junction laser).

Holography - Construction and reconstruction of hologram.

UNIT III - CRYSTAL PHYSICS

9

Importance of crystals - Types of crystals - Basic definitions in crystallography (Lattice –space lattice - unit cell - lattice parameters – basis - crystallographic formula) - Seven crystal systems and fourteen Bravais lattices – Lattice planes and Miller indices – Interplanar distance - d spacing in cubic lattice - Calculation of number of atoms per unit cell - Atomic radius - Coordination number and Atomic Packing factor for SC, BCC, FCC and HCP Structures - Polymorphism and allotropy.

Crystal imperfections - Point, line and surface defects - Burger vector.

UNIT IV - ELECTROMAGNETISM

9

Electrostatics - Electric field - Electric field intensity – Field due to discrete and continuous

charges – Electric lines of forces – Electric flux – Gauss’s law – Divergence of E – Applications of Gauss’s law – Curl of E.

Magnetostatics – Magnetic fields – Magnetic Lorentz force – Force experienced by current carrying conductor in magnetic field – Steady currents – Magnetic field due to steady current - Biot - Savart Law - Straight line currents – Ampere’s circuital law – Divergence and curl of B – Applications of Ampere’s circuital law - Comparison of Magnetostatics and Electrostatics.

UNIT V - THERMAL PHYSICS

9

Heat and temperature - Modes of heat transfer (Conduction, convection and radiation) - Specific heat capacity - thermal capacity and coefficient of linear thermal expansion.

Thermal conductivity - Measurement of thermal conductivity of good conductor - Forbe’s method - Measurement of thermal conductivity of bad conductor - Lee’s disc method - Radial flow of heat - Cylindrical flow of heat - Practical applications of conduction of heat.

Thermal radiations - Properties of thermal radiations - Applications of thermal radiations.

Total: 45 Hours

TEXT BOOKS

1. M.N.Avadhanulu, ‘Engineering Physics’ S.Chand & Company Ltd, New Delhi (2015)
2. D. K. Bhattacharya, Poonam Tandon “Engineering Physics” Oxford University Press 2017.

REFERENCES

1. Engineering Physics, Sonaversity, Sona College of Technology, Salem (Revised Edition 2018).
2. B. K. Pandey and S. Chaturvedi, Engineering Physics , Cengage Learning India Pvt. Ltd., Delhi, 2019
3. Rajendran, V, and Marikani A, ‘Materials science’ TMH Publications, (2004) New Delhi.
4. Palanisamy P.K, ‘Materials science’, SciTech Publications (India) Pvt. Ltd., Chennai, Second Edition (2007)

U19CHE104F - CHEMISTRY FOR TEXTILE TECHNOLOGISTS – I

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the course, the students will be able to,

- Analyze the types of impurities of water, their removal methods and explain the conditioning methods for domestic and industrial uses.
- Analyze the various types of chemical bonding and impacts on materials.
- Recognize the role applications of surface chemistry and catalysis in engineering and technology.
- Understand the basics of nano chemistry and nano material fabrication on fibers and its role.
- Apply the various instrumental methods of analysis on numerous engineering materials and their significances.

UNIT I - WATER TECHNOLOGY

09

Introduction - Characteristics – hardness – estimation of hardness by EDTA method, alkalinity and its estimation - Boiler feed water – requirements – disadvantages of using hard water in boilers – internal conditioning (colloidal, phosphate, calgon and carbonate conditioning methods) – external conditioning – zeolite process, demineralization process, desalination of brackish water by reverse osmosis.

UNIT II - CHEMICAL BONDING

09

Types of bond – van der Waals (or) intermolecular forces – types – hydrogen bond – types, Valence Bond Theory (VBT) – VSEPR Theory - Molecular Orbital Theory – Linear Combination of Atomic Orbitals (LCAO method)- energy level diagram of molecular orbitals (nitrogen and oxygen only) – coordinate bond – metallic bond.

UNIT III - SURFACE CHEMISTRY AND CATALYSIS

09

Adsorption-types-physical and chemical adsorption – adsorption of gases on solids-adsorption isotherms-Freundlich and Langmuir isotherms-adsorption of solutes from solution – applications of adsorption - role of adsorption in catalytic reactions – basic principles in adsorption chromatography – adsorption in pollution abatement (granular activated carbon and powdered activated carbon) – catalysis - types - characteristics of catalysis - autocatalysis - definition and examples.

UNIT IV - APPLICATIONS OF NANO CHEMISTRY IN TEXTILES

09

Basics - distinction between molecules, nanoparticles and bulk materials – size dependent properties – Synthesis: precipitation – thermolysis – hydrothermolysis – solvothermolysis –sol-gel technique – Potential applications of Nanoparticles in textiles

- Fabrication Process – Electrospinning- Self Cleaning Fabrics - Water Repellency Property- UV-Protection Property - Anti-Bacterial Property - Anti-Static Property - Wrinkle Resistance Property - Flame Retardant Finish- Nanotextiles – Properties, Types, Functionalities and Processes.

UNIT V - INSTRUMENTAL METHODS OF ANALYSIS 09

Beer-Lambert's law – UV-Visible spectroscopy, Colourimetry – principles and instrumentation - Estimation of Iron - IR and FT-IR spectroscopy – principles and instrumentation (block diagram only) - Thermoanalytical methods – principles and applications of Thermogravimetry (TGA), Differential thermal analysis (DTA) and Differential Scanning Calorimetry (DSC).

Total: 45 Hours

TEXT BOOKS

- P.C.Jain and Monica Jain, “Engineering Chemistry” Dhanpat Rai Pub, Co., New Delhi, 2018 (17th Edition).
- N. Panneer Selvam et al., “Chemistry For Textile Technologists - I”, Sonaversity, Sona College of Technology, Salem, 2019.

REFERENCE BOOKS

- O.G. Palanna “Engineering Chemistry” Tata McGraw-Hill Pub.Co.Ltd, New Delhi, 2017.
- Kannan P., Ravikrishnan A., “Engineering Chemistry”, Sri Krishna Hi-tech Publishing Company Pvt. Ltd., Chennai, 2016.
- H.K. Chopra, A. Parmer, “Chemistry for Engineers”, Narosa Publishing House, New Delhi, 110 002, 2016.

U19FTY107 - TEXTILE SCIENCE: FIBRES AND YARNS

L T P C
3 0 0 3

Course Outcomes: At the end of the course, the students should be able to,

- Classify textile fibres, define the basic terms used, outline fundamental concepts of fibre structure, describe the properties of an ideal fibre and state the properties and uses of major natural fibres.
- Describe the common man-made fibre spinning techniques and explain the properties and uses of major natural-polymer, synthetic and special fibres.
- Describe the identification methods of common fibres and define the common linear density terms used for man-made fibres.
- Outline the objectives and working principles of the different processes in spun yarn production.
- Describe sewing thread types, fibres used, quality requirements, outline of production and state the characteristics and uses of fancy yarns and certain special yarns.

UNIT I - GENERAL INTRODUCTION AND NATURAL FIBRES 10

Definitions: Textile fibre, staple fibre, filament; yarn: spun, continuous filament, monofilament and multifilament, flat and textured yarn; single, ply and cabled yarns; thread; fabric: woven, knitted and non-woven

Classification of textile fibres: Main classes and sub-classes with examples for each class / sub-class

Basic concepts of fibre structure: Definition of orientation, types, schematic representations and examples; definition of crystallinity, schematic representation of fibre with crystalline and amorphous contents, outline of influence of crystallinity on fibre properties; crystallinity values of some common natural and man-made fibres

Properties expected of a Textile Fibre: Definitions of fibre length, fineness, strength, flexibility, elongation, elasticity, moisture content, moisture regain, crimp, fibre uniformity, lustre, fibre modulus, T_m and T_g ; Essential and desirable properties of a textile fibre

Natural Fibres: Definition and source, properties and uses of cotton, flax, silk and wool

UNIT II - MAN MADE FIBRES 09

Introduction to man-made fibre spinning: Principles of wet-spinning, dry-spinning and melt-spinning of man-made fibres, principle of drawing and its importance.

Raw materials, properties and uses of natural-polymer and synthetic fibres: Viscose rayon, modal, bamboo, polyester, nylon 6, acrylic and elastomeric fibre. **High performance fibres:** Definition, characteristics, types, properties and uses of Nomex and Kevlar. Climate yarn; latest developments in fibres to attain comfort properties.

UNIT III - LINEAR DENSITY AND IDENTIFICATION OF FIBRES **08**

Linear density: Definition, denier and tex systems, decitex, millitex, kilotex and English cotton count; Conversion formulae and simple calculations of linear density

Definition, properties and uses: Micro, nano fibres and bio polymers

Identification of common textile fibres: Microscopic test, burning test, solubility test and density test

UNIT IV - OUTLINE OF YARN PRODUCTION **10**

Preparatory processes: Objects of ginning, names of machines used; Objects of mixing and blending; Objects of blow room, common sequence of machines used for processing of cotton, manmade fibre and blends; Objects of carding, outline of working principle of high production card; Objects of combing, difference between carded and combed yarns; Objects of draw frame, outline of working principle of draw frame; Objects of speed frame, outline of working principle of simplex

Yarn production: Objects of ring spinning outline of working principle of ring frame; yarn count and TPI; Objects of doubling, difference between single and double yarn; Outline of principles of compact spinning. **New spinning system:** Types and its needs, principle of rotor and air jet spinning system.

UNIT V - SEWING THREADS, FANCY YARNS AND SPECIAL YARNS **08**

Sewing thread: Definition, quality requirements, fibres used, types, properties, production process, selection of sewing thread, ticket number, leading brands of sewing threads

Fancy yarns: Definition, brief study of slub yarn, snarl yarn, melange yarn, and spotted yarn. End uses of fancy yarn

Other special yarns: Brief study of core spun yarn, metallic yarn, hollow yarn and applications of these yarns

TOTAL: 45 Hours

TEXT BOOKS

1. Mishra S.P., "Fibre Science and Technology", New Age International Publishers, New Delhi, 2000
2. Lord P. R., "Yarn Production: Science Technology and Economics", The Textile Institute, Manchester, U.K., 2003

REFERENCES

1. Bernard P. Corbman, “Textiles: Fibre to Fabric”, McGraw Hill International Edition, New Delhi, 1983
2. Srinivasamoorthy H. V., “Introduction to Textile Fibres”, The Textile Association India, Mumbai, 1993
3. Cook, J. Gordon, “Hand Book of Textile Fibres: Man-Made Fibres”, Vol. 1 and 2, Merrow Publishing Co. Ltd., England, 2005
4. Moncrief R.W., “Manmade Fibres”, John Willey & Sons, New York, 2004
5. Klein W. “ A practical guide to opening and carding”, Vol 2, The Textile Institute, Manchester, 1987
6. Klein W. “ A practical guide to combing and drawing ”,Vol 3, The Textile Institute, Manchester, 1987
7. Klein W. “ A practical guide to ring spinning”,Vol 4, The Textile Institute, Manchester, 1987

U19PCL108B - PHYSICS AND CHEMISTRY LABORATORY
PHYSICS PART
(For B.Tech. Fashion Technology)

L T P C
0 0 2 1

Course Outcomes: At the end of the course, the students will be able to,

1. Demonstrate by means of an appropriate experiment the poor thermal conductivity of a given bad conductor
2. Apply the principle of spectrometry to determine the properties of a given prism.
3. Demonstrate the experimental set up to execute torsional oscillations and determine the rigidity modulus of the given wire
4. Demonstrate the experimental setup for stream line flow of low viscus liquid and determine the coefficient of viscosity of the given liquid by Poiseuille's method.
5. Investigate the non – uniform bending behavior of a given material.
6. Determine the band gap of a semiconductor diode.

LIST OF EXPERIMENTS (PHYSICS PART)

1. Determination of the thermal conductivity of a bad conductor using Lee's Disc apparatus.
2. Determination of dispersive power of the prism for various pairs of colors in the mercury spectrum using a spectrometer.
3. Determination of rigidity modulus of the material of wire using torsion pendulum
4. Determination of coefficient of viscosity of liquid by Poiseuille's method.
5. Determination of the Young's modulus of the given material by non - uniform bending method.
6. Determination of band gap of the given semiconductor diode.

(Any five experiments may be conducted from the above list)

Total: 30 Hours

U19PCL108B - PHYSICS AND CHEMISTRY LABORATORY
CHEMISTRY PART
(For Fashion Technology)

L T P C
0 0 2 1

Course Outcomes: At the end of the course, the students will be able to,

- Estimate the amount of total, temporary and permanent hardness in the given water sample
- Analyse the different types of alkalinity and determine their amount in the given water sample
- Estimate the amount of hydrochloric acid present in the given solution using conductivity meter.
- Estimate the amount of hydrochloric acid present in the given solution using pH metry.
- Describe the estimation of ferrous iron present in the given solution using potentiometer.
- Evaluate the iron content of the water by spectrophotometry.

List of Experiments (Chemistry part)

1. Estimation of hardness of water sample by EDTA method.
2. Estimation of alkalinity of water sample by indicator method.
3. Estimation of HCl by conductometry. (HCl vs NaOH)
4. Estimation of HCl acid by pH metry.
5. Estimation of ferrous ion by potentiometric titration.
6. Determination of iron content in water by spectrophotometric method

(Any five experiments may be conducted from the above list)

Total: 30 Hours

U19FTL116 - FIBRE AND YARN ANALYTICAL LABORATORY

L	T	P	C
0	0	2	1

Course Outcomes: At the end of the study of this course the students will be able to,

1. Identify the common textile fibres and determine the blend proportion of binary blends
2. Determine the physical properties like moisture regain, linear density, swelling behaviour of fibre and yarn / sewing thread characteristics like yarn type, yarn count and ticket number
3. Solve real time problems in fibre identification, fibre and yarn properties

LIST OF EXPERIMENTS

1. Identification of fibres by microscopy: longitudinal views of fibres
2. Identification of fibres by microscopy: cross-sectional views of fibres
3. Confirmation of fibres by means of the burning test
4. Confirmation of fibres by means of the solubility test
5. Identification of a textile fibre of unknown identity using microscopic, burning and solubility tests
6. Determination of blend proportion in fibre mixture / blended yarn / fabric.
7. Determination of the atmospheric conditions in the lab and the amount of moisture in given samples of conditioned and unconditioned fibre
8. Estimation of the crimp of man-made staple fibre and the denier by length and mass measurements
9.
 - (a) Identification of yarn type and twist direction and determination of yarn count of given spun yarn
 - (b) Identification of fibre type and determination of number of filaments and yarn linear density of given continuous filament yarn
 - (c) Identification of filament yarn and spun yarn
10. Identification of type of given sewing thread and determination of its ticket number and linear density

DEMONSTRATION

11. Identification of fibre by density test using density gradient column
12. Examination of the diametric swelling behaviour of cotton and viscose rayon fibres in water and alkali solution

SAMPLE COLLECTION

13. Collection of various fibre and yarn samples

TOTAL: 30 hours

U19CFTL117 - COMPUTER BASICS FOR FASHION TECHNOLOGY LABORATORY

L	T	P	C
0	0	2	1

Course Outcomes: At the end of a study of this course the students will be able to,

1. Apply MS Excel tools in the analysis of apparel-production data.
2. Develop basic fashion sketches using fashion-CAD software and compile information on ancient fashion and latest fashion trends
3. Generate fashion ideas for garments using stated requirements and information related to ancient and current trends in the fashion industry

BASICS OF MS EXCEL

1. Datasheet – Manipulating tools
2. Built-in functions
3. Basic analysis options for apparel-production data

BASICS OF CAD - FASHION ILLUSTRATOR SOFTWARE

4. CAD Tools I
5. CAD Tools II
6. Development of basic fashion sketches and simple designs

COLLECTION OF VARIOUS FASHION-DESIGN RELATED DATA

7. Collection of details about the origin and evaluation of costumes
8. Analysis of motifs, design, colour and materials used in Indian, Egyptian, Roman, French and English costumes
9. Collection of profiles of at least three popular Indian/International designers and their design collections (for two seasons)

TOTAL: 30 hours

U19GE101 - BASIC APTITUDE – I
(Common to All Departments)

L	T	P	C
0	0	2	0

Course Outcomes: At the end of course, the students will be able to

1. Solve fundamental problems in specific areas of quantitative aptitude
2. Solve basic problems in stated areas of logical reasoning
3. Demonstrate rudimentary verbal aptitude skills in English with regard to specific topics

1. Quantitative Aptitude and Logical Reasoning

Solving simple problems with reference to the following topics:

- a. Numbers – HCF & LCM
- b. Decimal fractions
- c. Square roots & cube roots
- d. Surds & Indices
- e. Logarithms
- f. Percentage
- g. Averages
- h. Coding and Decoding & Visual language

2. Verbal Aptitude

Demonstrating plain English language skills with reference to the following topics:

- a. Synonyms
- b. Antonyms
- c. Verbal analogy
- d. Editing passages
- e. Sentence filler words


TOTAL: 30 hours

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester II under Regulations 2019 (CBCS)
Branch: Fashion Technology

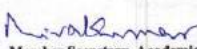
S.No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Category
Theory							
1	U19MAT202E	Probability and Statistical Quality Control	3	1	0	4	BS
2	U19PHY203E	Engineering Physics - II	3	0	0	3	BS
3	U19CHE204C	Chemistry for Textile Technologists - II	3	0	0	3	BS
4	U19BEE206	Basics of Mechanical and Electrical Engineering	3	0	0	3	ES
5	U19FT201	Woven Fabric Manufacture and Structure	3	0	0	3	PC
6	U19EGR206B	Engineering Graphics for Fashion Designing	1	0	2	2	ES
Practical							
7	U19ENL215	English for Engineers - II	0	0	2	1	HS
8	U19FT202	Woven Fabric Structure and Textile CAD Laboratory	0	0	2	1	PC
9	U19GE201	Basic Aptitude - II	0	0	2	0	EEC
Total Credits						20	
Optional Language Elective*							
10	U19OLE1201	French	0	0	2	1	HS
11	U19OLE1202	German					
12	U19OLE1203	Japanese					

*Students may opt for foreign languages viz., German/French/Japanese with additional one credit (Not accounted for CGPA calculation)

Approved By


Chairperson, Science and Humanities BoS
Dr.M.Renuga


Chairperson, Fashion Technology BoS
Dr.D.Raja


Member Secretary, Academic Council
Dr.R.Shrivakumar


Chairperson, Academic Council & Principal
Dr.S.R.R.Senthil Kumar

Copy to:-

HOD/ Fashion Technology, Second Semester BE FT Students and Staff, COE

13.12.2019

B.E/B.Tech Regulations-2019

U19MAT202E - PROBABILITY AND STATISTICAL QUALITY CONTROL

L T P C
3 1 0 4

Course Outcome: At the end of the course, the students will be able to

1. apply the concepts of probability, random variable and their properties to generate the moments.
2. fit the suitable distribution and its properties to the real world problems and interpret the results.
3. apply the concepts of joint probability distribution and its properties to find the covariance and transformation of random variables.
4. apply the various designs of experiments to find cause-and-effect relationships.
5. apply the process control techniques to control and maintain the quality of the product.

UNIT I - RANDOM VARIABLES 12

Discrete and continuous random variables – Moments – Expectation – Moment generating function and its properties.

UNIT II - PROBABILITY AND DISTRIBUTIONS 12

Binomial, Poisson, Geometric, Uniform, Exponential and Normal distributions.

UNIT III - TWO DIMENSIONAL RANDOM VARIABLES 12

Joint distributions – Marginal and conditional distributions – Covariance – Correlation – Central limit theorem.

UNIT IV - DESIGN OF EXPERIMENTS 12

Analysis of variance – One way classification – Completely randomised design – Two way classification – Randomised block design – Latin square.

UNIT V - STATISTICAL QUALITY CONTROL 12

Control charts for measurements (\bar{X} and R charts) - Control charts for attributes, p , c and np Charts – Examples of application of statistical control charts in garment industry.

TEXT BOOK

1. T. Veerarajan, "Probability, Statistics and Random Processes with Queueing Theory and Queueing Networks", McGraw Hill Publishers, 4th Edition, 7th reprint, 2018.

REFERENCES

1. S. C. Gupta, V. K. Kapoor, "Fundamentals of Mathematical Statistics", Sultan Chand and Sons Publishers, 11th Edition, Reprint, 2019.
2. S. P. Gupta, "Statistical Methods", Sultan Chand and Sons Publishers, 15th Edition, 2012.
3. R. A. Johnson and C. B. Gupta, "Miller and Freund's, Probability and Statistics for Engineers", Pearson Publishers, 9th Edition, 2018.
4. S. Ross, "A first course in probability", Pearson Publishers, 9th Edition, 2019.
5. P. G. Hoel, S. C. Port and C. J. Stone, "Introduction to Probability Theory", Universal Book Stall Publishers, Reprint, 2003.
6. W. Feller, "An Introduction to Probability Theory and its Applications", Vol. 1, 3rd Edition, Wiley Publishers, 2008.

U19PHY203E - ENGINEERING PHYSICS- II

L	T	P	C
3	0	0	3

Course Outcome: At the end of the course, the students will be able to

1. differentiate the electrical and thermal conductivity of metals.
2. discuss the three moduli of elasticity in detail.
3. apply hydrodynamic principles for the flow of liquids.
4. elucidate the elastic, anelastic and visco-elastic behaviour of materials.
5. evaluate the novel properties of phase change materials, shape memory polymers and nanomaterials.

UNIT I - CONDUCTING MATERIALS

9

Usage of conducting materials– basic definitions (electrical resistance-conductance-resistivity-conductivity).

Classical free electron theory of metals - postulates of classical free electron theory - microscopic form of Ohm's law - Electrical conductivity - definition and expression for electrical conductivity - thermal conductivity - definition and expression for thermal conductivity – Wiedemann - Franz law and Lorentz number - Success and failure of classical free electron theory.

Quantum free electron theory - Drawbacks of quantum free electron theory - origin of energy bands - band theory of solids (qualitative treatment only) - Fermi energy and Fermi distribution function – Effect of temperature on Fermi function - Density of energy states - carrier concentration in metals - Electrically conductive textiles.

UNIT II - ELASTIC PROPERTIES OF MATERIALS

9

Stress-Strain - Hooke's law - Modulus of elasticity - Young's modulus - Rigidity modulus -Bulk modulus - Poisson's ratio – stress - strain diagram - applications of stress - strain diagram - factors affecting elasticity.

Bending of beams –expression for bending moment – elevation produced at the midpoint of the beam-Measurement of Young's modulus by uniform bending-Cantilever depression produced at the loaded end of the beam-depression produced at the midpoint of the beam- Measurement of Young's modulus by non uniform bending-I shaped girders.

Torsion pendulum - Work done in twisting a wire - Expression for couple per unit twist -Determination of rigidity modulus of thin wire by torsion pendulum.

UNIT III - HYDRODYNAMICS **9**

Viscosity - Stream line motion - Turbulent motion - Reynold's number - Determination of viscosity of fluids - Poiseuille's method.

Surface Tension - Molecular forces - Surface energy and surface tension - Rise of liquids in a capillary tube - Determination of surface tension by capillary rise method - Applications: Detergents and surface tension.

Moisture absorption in fibres - Humidity and its importance in Textiles - definition of humidity, Absolute humidity, Relative humidity, Recommended allowance, Regain and moisture content.

UNIT IV - ELASTIC, INELASTIC AND VISCOELASTIC BEHAVIOR **9**

Elastic behavior: Atomic model of elastic behavior - Modulus as a parameter in design, stiffness - Rubber like elasticity: Elastomers - coiling and uncoiling of an elastomer chain -Stress strain curve for elastomer molecule.

Anelastic behavior - Relaxation processes-damping capacity - Visco-elastic behavior - Spring dashpot models - Maxwell element - Voigt-Kelvin element - Four parameter model, Retarded elasticity, Entropy elasticity.

UNIT V -NEW ENGINEERING MATERIALS **9**

Phase change materials - Basic information of phase change materials - Phase change technology-PCM in textiles - Shape memory polymers (SMPs) - Introduction ,Features, properties, classifications and applications.

Nanoscience and Nanotechnology - significance of the nanoscale - different types of nanostructures (Confinement Dimensions 0-D, 1-D, 2-D and 3-D) - Categories of nanomaterials - Fabrication of nonomaterials - Ball milling method and Chemical vapour deposition technique - Applications.

TOTAL: 45 Hours

TEXT BOOKS

1. M.N.Avadhanulu, 'Engineering Physics' S.Chand &Company Ltd, New Delhi (2015)
2. Subramaniam. N, Brijlal, ' Properties of Matter', S. Chand Group, New Delhi (2007) (Unit II)

REFERENCES

1. 'Applied Physics', Sonaversity, Sona College of Technology, Salem (Revised edition, 2015).
2. Physics for Mechanical Engineering, Sonaversity, Sona College of Technology, Salem (Revised Edition 2016).
3. Rajendran, V, and Marikani A, 'Materials science' TMH Publications, (2004) New Delhi.
4. Palanisamy P.K, 'Materials science', SciTech Publications (India) Pvt. Ltd., Chennai, Second Edition (2007)

U19CHE204C - CHEMISTRY FOR TEXTILE TECHNOLOGISTS –II

L	T	P	C
3	0	0	3

Course Outcome: At the end of the course, the students will be able to

1. compare the various types of organic material used in textile industry and their structure activity relationship and also can replace alternative environmental organic substituents.
2. analyze various types of inorganic materials used in textile industry and their mechanistic way in those application and preparation, uses in other industry.
3. analyze the types of fibre forming polymers, polymerization and characteristics of Polymers.
4. discuss topics related to various types of modern washing machines and highlight the importance of using industrial cleaning agents and label care.
5. give an account of the principles and practices of stain removal in textiles / garments and describe the applications of stiffening agents to textiles.

UNIT I - ORGANIC COMPOUNDS FOR TEXTILE INDUSTRY **09**

Cellulose – structure of cellulose – derivatives of cellulose – carboxymethyl cellulose and Gun cotton – structural aspects of cellulose –waxes - classification of waxes - Organic dyes – introduction – colour and chemical constitution – classification of dyes by structure – examples only– classification of dyes by methods of application – direct dyes – vat dyes – mordant dyes - azo dyes – disperse dyes – reactive dyes – examples only - chemistry of reactive dyes – Textile auxiliaries – dyeing auxiliaries – optical brighteners – printing auxiliaries – synthetic softeners – wetting agents, etc.

UNIT II - INORGANIC COMPOUNDS FOR TEXTILE INDUSTRY **09**

Zeolites – types – applications – ion exchange properties of pigments – white pigments-titanium dioxide – lithophone – zinc oxide – coloured pigments - iron oxide – ultramarine – bleaching agents – Oxidizing bleaching agents, calcium hypochlorite, hydrogen peroxide, Reducing bleaching agents- sulphur dioxide and sodium hyposulphite, Applications of Chemistry in textile technology.

UNIT III - POLYMERS

09

Polymers: Terminology related to fibre molecules-classification of polymers; polymer-monomer-copolymer-types of fibre forming polymers; homo polymer-copolymer-alternating copolymer-random copolymer-block copolymer-graft copolymer-types of **polymerization:** addition-condensation and copolymerization-properties of polymers.

UNIT IV - LAUNDRY EQUIPMENT WITH CARE LABELS AND LAUNDRY REAGENTS

09

Washing Machines: Methods of washing, manual and machine washing. Study of modern/industrial washing machines: Rotary, swirling, pressure, tumble type washing machines laundering specialty fabrics and Care Labels: Importance of care label, various systems of care labelling, placement of labels on garments.

Laundry reagents: Soaps, detergents, cleaning action of soaps, indigenous cleaning agents, industrial cleaning agents, application of perchloroethylene, acetone and petrol. Study on modern cleaning agents.

UNIT V - STAIN REMOVAL AND STIFFENING

09

Stain Removal: Principles of stain removal, classification of stains and stain removers, various solvents for removing stains like blood, tea, rust, oil/grease, ink, candle wax, fruit juice, gum and other handling stains, stain removal procedure in garment industries.

Stiffening: Stiffening agents, purpose of stiffening and classification of stiffening agents, preparation and uses of stiffeners, steps in stiffening process.

TOTAL: 45 Hours

TEXT BOOKS

1. P.C.Jain and Monica Jain, "Engineering Chemistry" Dhanpat Rai Pub, Co., New Delhi, 2018 (17th Edition).
2. N. Panneer Selvam et al., "Chemistry For Textile Technologists – II" by Sonaversity, Sona College of Technology, Salem, 2019.

REFERENCES

1. O.G. Palanna "Engineering Chemistry" Tata McGraw-Hill Pub.Co.Ltd, New Delhi, 2017.
2. Kannan P., Ravikrishnan A., "Engineering Chemistry", Sri Krishna Hi-tech Publishing Company Pvt. Ltd., Chennai, 2016.

3. H.K. Chopra, A. Parmer, "Chemistry for Engineers", Narosa Publishing House, New Delhi, 110 002, 2016.
4. Gowariker V.R. , Viswanathan N.V. and Jayadev Sreedhar, "Polymer Science", New Age International P (Ltd.), Chennai, 2006
5. Gurdeep R. Chatwal, "Synthetic Organic Chemistry", Himalaya Publishing House, Mumbai, 1994.
6. Dr. C.V. Koushik and Antao Irwin Josico, "Chemical Processing of Textiles Preparatory Processes and Dyeing", NCUTE Publication, New Delhi – 110 016.
7. Dantiyagi S., "Fundamentals of Textile and Their Care", Oriental Longmans Ltd, New Delhi, 1996.
8. Noemia D'Souza, "Fabric Care", New Age International (P) Ltd. Publishers, Chennai, 1998.
9. Shenai V. A., "Technology of Textile Finishing", Sevak Publications, Bombay, 1995.
10. Davis, "Laundry and Clothing Care", Drama Book Publishers, 1995.

U19BEE206 – BASICS OF MECHANICAL AND ELECTRICAL ENGINEERING

L	T	P	C
3	0	0	3

Course Outcome: At the end of the course, the students will be able to

1. Summarise the principle of operation of various conventional power plants and explain the components
2. Discuss the working principles of Refrigerators and Air conditioner used in domestic purposes
3. State the fundamental laws of electrical circuits and explain the basic principles related to DC and AC electrical circuits
4. Explain the constructional features and principles of operation of DC and AC motors
5. State the working principles of electrical measuring instruments and calculate electrical power consumption

UNIT I - POWER PLANT ENGINEERING **9**

Introduction, Classification of power plants-working of steam, gas, diesel, hydro-electric, nuclear power plants; Pumps-working principle of reciprocating and centrifugal pumps. Boilers: types, applications of Cochran, Lamont, Benson, Babcock-Wilcox boilers; Properties of steam; Dryness fraction, latent heat, Total heat of wet steam, Superheated steam; Use of steam tables; Volume of wet steam; Volume of superheated steam.

UNIT II - REFRIGERATION AND AIR CONDITIONING **9**

Terminology of refrigeration and air conditioning; Principle of vapour compression and absorption system-window and split type air conditioner
Compressor – Classification, Working of reciprocating and rotary air compressors, Applications

UNIT III - DC AND AC CIRCUITS **10**

DC Circuits: Ohm's law, Kirchoff's laws, Series and Parallel circuits, Star – Delta transformation – Simple Problems.

AC Circuits: AC waveform standard terminologies, Single phase RL, RC, RLC series circuits – Simple Problems. Introduction to three phase circuits.

UNIT IV - DC AND AC MOTORS

10

DC motors: Construction - Principle of operation - Torque equation - Types - Characteristics - Applications.

Three Phase Induction Motor: Construction- Principle of operation- Torque Equation - Slip - Torque vs Slip characteristics - Applications.

UNIT V - ELECTRICAL DRIVES

7

Basic Electrical Drives – Types of Electric Drive – Types of Load – Classes of Duty – Factors Affecting Selection of Electric Drives – Heating and Cooling Curve.

TOTAL: 45 Hours

TEXT BOOKS

1. Shunmagam G, Ravindran S, “**Basic Mechanical Engineering**”, Tata McGraw Hill, 2011.
2. V.K. Mehta and Rohit Mehta, “**Principles of Electrical Engineering and Electronics**”, S. Chand publishers, 2015.

REFERENCES

1. Venugopal K, Prabhuraja V, “ **Basic Mechanical Engineering**”, Anuradha Agencies, 2014
2. S.R.J. Shantha Kumar, “**Basic Mechanical Engineering**”, 2nd Edition, Hi-Tech Publications, 2000.
3. S.K. Bhattacharya, “**Basic Electrical and Electronics Engineering**”, Pearson publishers, 2016
4. D.P. Kothari and I.J. Nagrath, ‘**Electric Machines**’, Tata McGraw Hill, 2010.
5. B.L. Theraja, “Fundamentals of Electrical Engineering and Electronics”, S. Chand publishers, 2008.
6. SudhakarA and Shyam Mohan SP, Circuits and Network Analysis and Synthesis”, Tata McGraw Hill, 2015.

U19FT201 – WOVEN FABRIC MANUFACTURE AND STRUCTURE

L	T	P	C
3	0	0	3

Course Outcome: At the end of the course, the students will be able to

1. explain the winding, warping, sizing, drawing-in, denting and knotting process.
2. describe the working principles of various loom mechanisms.
3. explain the various principles of weft insertion in shuttleless looms and modern weaving.
4. explain the elementary features of woven design and explain the construction of different elementary weaves with appropriate diagrams
5. illustrate the design of dobby, jacquard, mock leno and pile fabrics.

UNIT I - WEAVING PREPARATORY PROCESSES 9

Winding: Objectives and yarn passage in cone winding machines, Objectives and yarn passage in pirn winding machine. **Warping machine:** Objectives, types and material passage. **Sizing:** Objects of sizing and list of sizing ingredients; drawing-in, denting and knotting.

UNIT II - BASICS OF LOOM MECHANISMS 10

Looms: Types of looms. **Basic motions:** Primary, secondary and auxiliary motions.

Primary mechanisms: Principles of Shedding; Dobby and Jacquard. Principle of Picking and beat up.

Secondary mechanisms: Principle of take-up and let-off motions.

Objectives of Auxiliary mechanisms: Warp protector mechanism, Warp stop motion, weft stop motion, temples and brakes.

UNIT III - SHUTTLELESS LOOMS 8

Shuttleless weaving machines: Principles of weft insertion by projectile, rapier, air jet and water jet. Types of selvages. Multi-phase weaving and 3D fabrics.

UNIT IV - ELEMENTARY WEAVES 9

Elements of woven design: Design, Draft and its types, Peg plan and Repeat

Construction of elementary weaves: Plain weave and its derivatives: warp rib, weft rib and matt rib, Twill weave and its derivatives: ordinary twill, herringbone twill and zigzag twill, Satin, Sateen and their derivatives; Honeycomb, Ordinary and Brighton honeycomb, huck a back, Crepe weave and its modifications.

UNIT V - DOBBY AND JACQUARD DESIGN

9

Spot figuring: Basic dobby, Jacquard designs, Arrangement of motifs in dobby and Jacquard designs; Extra-warp and extra-weft figuring.

Mock leno: Perforated mock leno design; Pile fabrics: plain velveteen and corduroys; Colour and weave effects; Principle of Double cloth construction; Fabric structures and its commercial name.

TOTAL: 45 Hours

TEXT BOOKS

1. Talukdar M. K., Sriramulu P. K. and Ajgaonkar D. B., "Weaving: Machines, Mechanisms, Management", Mahajan Publishers Pvt Ltd, 2004
2. Gokarneshan N., "Fabric Structure and Design", New Age International (P) Limited, 2009

REFERENCES

1. W.S. Murphy, "Textile weaving and Design", Abhishek Publications, 2007.
2. H. Nisbet, "Grammar of Textile Design", Taraporewala and Sons Co. Pvt. Ltd., 1994
3. Grosicki, Watson's Textile design and colour, Elementary weaves and figured fabrics, Butterworth & Co publishers ltd.

U19EGR206B – ENGINEERING GRAPHICS FOR FASHION DESIGNING

L	T	P	C
1	0	2	2

Course Outcome: At the end of the course, the students will be able to

1. predict the construction of various curves in civil elevation plan and machine components.
2. draw the projection of three dimensional objects representation of machine structure and explain standards of orthographic views by different methods.
3. analyze the principles of projection of various planes by different angle to project points, lines and planes and simple solids.
4. study the development of simple solids and surfaces
5. create fabric print design, garment designs and illustrate the human figures.

CONCEPTS AND CONVENTIONS (Not for Examination)

9

Importance of graphics in engineering applications, Use of drafting instrument, BIS conventions and specifications - Size, layout and folding of drawing sheets, Lettering and dimensioning.

COMPUTER AIDED DRAFTING (Not for Examination)

9

Importance 2d Drafting, sketching, modifying, transforming and dimensioning.

UNIT I – PLANE CURVES (Free hand sketching)

9

Curves used in engineering practices Conics – Construction of ellipse – Parabola and hyperbola by eccentricity method – Construction of cycloid – construction of involutes of square and circle – Drawing of tangents and normal to the above curves.

UNIT II – ISOMETRIC TO ORTHOGRAPHIC VIEWS (Free Hand Sketching)

9

Representation of three dimensional objects – General Principles of Orthographic projection – Need for importance of multiple views and their placement – First angle projection – layout of views – Developing visualization skills through free hand sketching of multiple views from pictorial views of objects.

UNIT III – PROJECTION OF POINTS, LINES PLANE SURFACES (Free hand sketching and 2D Software) 9

Projection of points- All 4 quadrants, lines- Perpendicular to H.P and parallel to V.P, Perpendicular to V.P and parallel to H.P ,Inclined to H.P parallel to V.P, inclined to V.P and parallel to H.P, Planes – inclined to any one of the reference plane, Solids – prism, pyramid, cylinder and cone – resting on H.P and resting on V.P-simple positions.

UNIT IV – SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES (Free hand sketching and 2D Software) 9

Sectioning of simple solids like prisms – pyramids, cylinder and cone in simple vertical position by cutting planes inclined to one reference plane and perpendicular to the other, Development of lateral surfaces of simple and truncated solids – Prisms – pyramids – cylinders and cones.

UNIT V - FASHION DESIGNING 9

(2D CAD software) Creation of fabric print design - garment design - Illustration of three different poses of fashion figure.

(Not for Examination)-Paper craft models preparation of simple and truncated solids – Prisms – pyramids – cylinders and cones.

TEXT BOOK

1. P. Suresh, “Engineering Graphics and Drawing”, Sonaversity, Sona College of Technology, Salem, Revised edition, 2012.

REFERENCES

1. Manmeet sodhia, “Fashion Illustration”, Kalyani publishers, Ludhiana, New delhi, 2008.
2. Caroline Tatham and Julian Seaman, “Fashion Designing and Drawing course” Thames and Hudson Publishers, 2003.

U19ENL215 – ENGLISH FOR ENGINEERS – II

L	T	P	C
0	0	2	1

Course Outcome: At the end of the course, the students will be able to

1. demonstrate effective listening skills for academic and professional purposes.
2. draw conclusions on explicit and implicit oral information.
3. develop effective reading skills and reinforce skills required for grammar and building vocabulary.
4. read for gathering and understanding information, following directions and giving responses
5. introduce themselves, initiate and participate in conversations, deliver speeches and technical presentations

LISTENING

- Listening to conversations, welcome speeches, lectures and description of equipment.
- Listening to different kinds of interviews (face-to-face, radio, TV and telephone interviews). Understanding short conversations or monologues.
- Taking down phone messages, orders, notes etc.
- Listening for gist, identifying topic, context or function.
- Listening comprehension, entering information in tabular form.
- Intensive listening exercises and completing the steps of a process.
- Listening exercises to categorise data in tables.
- Listening to extended speech for detail and inference.

READING

- Understanding notices, messages, timetables, advertisements, graphs, etc.
- Reading passages for specific information transfer.
- Reading documents for business and general contexts and interpreting graphical representations.
- Error correction, editing mistakes in grammar, vocabulary, spelling, etc.
- Reading passage with multiple choice questions, reading for gist and reading for specific information, skimming for comprehending the general idea, meaning and contents of the whole text.

SPEAKING

- Self-introduction, personal information, name, home background, study details, area of interest, hobbies, strengths and weaknesses, projects and paper presentations, likes and dislikes in food, travel, clothes, special features of home town.
- Welcome address, vote of thanks, special address on specific topics.
- Mini presentation in small groups of two or three regarding, office arrangements, facilities, office functions, sales, purchases, training recruitment, advertising, applying for financial assistance, applying for a job, team work, discussion, presentation
- Situational role play between examiner and candidate, teacher and student, customer and sales manager, hotel manager and organiser, team leader and team member, bank manager and candidate, interviewer and applicant, car driver and client, industrialist and candidate, receptionist and appointment seeker, new employee and manager, employee and employee, P.A. and manager, schedule for training, asking for directions, seeking help with office equipment, clarifying an error in the bill, job details, buying a product, selling a product, designing a website, cancelling and fixing appointments, hotel accommodation, training facilities, dress code, conference facilities.

EXTENSIVE READING

1. You Can Win by Shiv Khera - Macmillan *Publishers* India
2. Who Moved my Cheese? – Spencer Johnson-G. P. Putnam's Sons
3. Discover the Diamond in You – Arindham Chaudhari – Vikas publishing House Pvt.
4. The Story of Amazon-com – Sara Gilbert, published by Jaico
5. The Story of Google – Sara Gilbert, published by Jaico

TOTAL: 40 Hours

U19FT202 – WOVEN FABRIC STRUCTURE AND TEXTILE CAD LABORATORY

L	T	P	C
0	0	2	1

Course Outcome: At the end of the course, the students will be able to

1. analyse the common woven fabrics and develop the related design, draft and peg plan
2. determine the cloth particulars for given fabrics
3. utilise effectively the different tools in textile CAD software
4. create/Develop different textile design and prepare their 2D simulations

List of Experiments

Analyse the structures of woven fabric Designs

1. Plain, Twill, Satin.(2 session)
2. Huck a back and Honey comb.(1 session)
3. Dobby cloth analysis. (1 session)
4. Jacquard cloth (1 session)
5. Extra warp and extra weft figuring. (1 sessions)
6. Pile fabrics – corduroy fabrics. (1 session)

Study and practice of

1. Different tools used in textile CAD software. (1 session)
2. Development of striped, checked and print design and preparation of its 2D simulation. (1 session)
3. Development of doobby design and preparation of its 2D simulation. (1 session)
4. Development of jacquard design and preparation of its 2D simulation. (1 session)

TOTAL: 30 Hours

U19GE201 - BASIC APTITUDE - II

L	T	P	C
0	0	2	0

Course Outcomes: At the end of the course, the students will be able to

CO1 solve more elaborate problems than those in BA-I in specific areas of quantitative aptitude.

CO2 solve problems of greater intricacy than those in BA-I in stated areas of logical reasoning.

CO3 demonstrate higher than BA-I level verbal aptitude skills in English with regard to specific topics.

List of Experiments

1. QUANTITATIVE APTITUDE AND LOGICAL REASONING

Solving quantitative aptitude and logical reasoning problems with reference to the following topics:

- a. Ratio and proportion
- b. Partnership
- c. Chain rule
- d. Ages
- e. Profit, loss and discount
- f. Geometry
- g. Area and volume
- h. Data arrangement

2. VERBAL APTITUDE

Demonstrating verbal aptitude skills in English with reference to the following topics:

- a. Jumbled sentences
- b. Reconstructions of sentences (PQRS)
- c. Sentence fillers two words
- d. Idioms and phrases
- e. Spotting errors
- f. Writing captions for given pictures

TOTAL : 24 Hours

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester III under Regulations 2019
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	U19MAT301E	Operations Research and Statistical Methods	3	1	0	4
2	U19FT301	Knitted Fabric Manufacture and Structure (lab integrated)	3	0	2	4
3	U19FT302	Chemical Processing of Textiles and Garments (Lab Integrated)	3	0	2	4
4	U19FT303	Fashion Art and Design	3	0	0	3
5	U19FT304	Pattern Making and Garment Construction - I	3	0	0	3
6	U19GE304	Mandatory Course : Constitution of India	2	0	0	0
Practical						
7	U19FT305	Pattern Making and Garment Construction Laboratory - I	0	0	2	1
8	U19FT306	Digital Fashion Design Laboratory	0	0	4	2
9	U19ENG301	Communication Skills Laboratory	0	0	2	1
10	U19GE301	Soft Skills and Aptitude – I	0	0	2	1
Total Credits						23

Approved By

Chairman, Fashion Technology BoS
Dr.D.Raja

Member Secretary, Academic Council
Dr.R.Shivakumar

Chairperson, Academic Council & Principal
Dr.S.R.R.Senthil Kumar

Copy to:-

HOD/Fashion Technology, Third Semester B.Tech FT Students and Staff, COE

COURSE OUTCOMES

At the end of the course, the students will be able to,

1. solve the linear programming problem using suitable methods.
2. apply the optimization technique to the transportation and assignment problems
3. analyze project management problems using critical path method and project evaluation and review technique
4. test the hypothesis for proportions, mean and standard deviation using – test
5. test the significance of the hypothesis using and distributions.

UNIT – I LINEAR PROGRAMMING PROBLEM 12

Linear programming problem - Mathematical formulation – Graphical solution method – Canonical and standard forms of Linear Programming Problem – Simplex method (using slack variables only) – Use of artificial variables – Big-M method.

UNIT – II TRANSPORTATION AND ASSIGNMENT PROBLEMS 12

Transportation problem – Initial basic feasible solution – North west corner rule – Least cost method – Vogel’s approximation method – Modified distribution method – Assignment problem – Hungarian method.

UNIT – III CPM AND PERT 12

Network construction – Critical Path Method (CPM) – Computations of total, free and independent floats – Project Evaluation and Review Technique (PERT) Analysis – Computation of expected time and standard deviation

UNIT – IV TESTING OF SIGNIFICANCE FOR LARGE SAMPLES 12

Parameter and statistic – Null and alternative hypothesis – Errors in sampling, critical region and level of significance – One tailed and two tailed tests – Testing of hypothesis for proportions, mean, and standard deviation using Z – test.

UNIT – V EXACT SAMPLING DISTRIBUTIONS 12

t-test for single mean, difference between means and paired -test – X^2 -tests for independence of attributes, goodness of fit – X^2 -test for population variance –F -test for variance.

Theory: 45 Hours Tutorial: 15 Hours Total: 60 Hours

Text books:

1. P. K. Gupta and D. S. Hira, “Problems in Operation Research”, Sultan Chand and Sons Publishers, 4th Edition, 2015.
2. T. Veerarajan, “Probability, Statistics and Random Processes with Queueing Theory and Queueing Networks”, McGraw Hill Publishers, 4th Edition (7th reprint), 2018.

Reference books:

1. H. A. Taha, "Operation Research: An Introduction", Pearson Publishers, 9th Edition, 2014.
2. P. K. Gupta and Manmohan, "Problems in Operations Research", Sultan Chand and Sons Publishers, 8th Edition, 2003.
3. S. P. Gupta, "Statistical Methods", Sultan Chand and Sons Publishers, 15th Edition, 2012.
4. S. C. Gupta, V. K. Kapoor, "Fundamentals of Mathematical Statistics", Sultan Chand and Sons Publishers, 11th Edition (Reprint), 2019.
5. R. A. Johnson and C. B. Gupta, "Miller and Freund's, "Probability and Statistics for Engineers", Pearson Publishers, 9th Edition, 2018.

Warp knitting: Classification, Functional Elements: Overlap and Underlap, Machine elements: Needle bar, Sinker bar, Guide bar, Presser bar, Warp beam, Pattern wheel, Chain links, Latch wire, Trick plate, Knitting Cycle of Tricot and Raschel machine.

Principle stitches of warp knitting: 1 and 1 lapping – pillar or chain stitch – in lay stitch – blind stitch – 2 and 1 lapping – longer lapping – atlas stitch.

Study and representation: Full Tricot, Locknit, Reverse Locknit, Satin, Shark Skin, Queen's cord. Fabric structure and its commercial name. Application areas of warp knit structure

UNIT V Interlining Fabrics (Non-Woven Fabric)

9

Interlining: Types (Woven, knit and non-woven) , Properties, and end uses. Non-woven Interlining: Method of non-woven fabric manufacture: Mechanical bonded, Chemical bonded, Thermal bonded, Spun bonded and Melt blown. Applications of non-woven fabrics.

Total: 75 hours (45 L + 30 P)

LIST OF EXERCISES

Analysis of KNIT FABRIC PARAMETERS: CPI, WPI, LOOP LENGTH, GSM,

YARN COUNT, FABRIC THICKNESS for the following knit samples.

Analyse the given single jersey structure and its derivatives (2 session)

1. Analyse the given rib structure and its derivatives (2 session)
2. Analyse the given interlock structure and its derivatives (2 session)
3. Analyse the given jacquard knitted structure (1 session)
4. Analyse the basic geometrical properties of knitted fabrics (1 session)
5. Experiment on Settings of machine parameters to attain different GSM of knitted fabric

TEXT BOOK

1. Anbumani N., Knitting-Fundamentals, Machines, Structures and Developments, New Age International Publishers, 2007.

REFERENCES

1. Ajgaonkar D.B., Knitted Technology, Universal Publishing Corporation, Mumbai, 1998.
2. Spencer D.J., Knitting Technology: A Comprehensive Handbook, Woodhead Publishing Limited, England, 3rd Edition, 2001.

COURSE OUTCOMES

At the end of the study of this course the students should be able to,

1. Explain the various grey preparatory processes for woven and knitted fabrics.
2. Describe the process of dyeing of cotton with direct, reactive and vat dyes.
3. Describe the process of dyeing of Polyester and PC Blends with disperse dyes.
4. Explain various methods and styles of printing.
5. Describe the evaluation procedure of dyed and printed materials

UNIT - I Grey Preparation 9

Singeing: Objectives of singeing.

Desizing: Objectives, enzyme desizing, their relative advantages and disadvantages.

Principle and working of machines used in grey preparation: padding mangles, jigger, winch, J-box.

Scouring: Purpose and process, continuous methods of scouring.

Bleaching: Bleaching of cotton goods with hydrogen peroxide.

Mercerisation: Objective and principle of fabric mercerisation; outline of pad-less chainless fabric mercerisation.

UNIT - II Dyeing of Natural Fibres 9

Fundamentals: Classification of colorants, difference between dye and pigment, common terms used in textile colouration.

Direct dyes: Properties and classification, dyeing of cotton with direct dyes.

Reactive dyes: Properties and classification, dyeing of cotton with M and VS reactive dyes

Acid Dyes: Dyeing of silk and wool.

UNIT - III Dyeing of Polyester and PC Blends 9

Disperse dyes: Properties and classification, dyeing of polyester with disperse dyes using Jet dyeing machine and continuous methods.

Dyeing of PC Blends: Polyester/cellulosic blends dyeing by one and two bath process.

Dyeing equipment: Principles of working of soft-overflow jet dyeing machine, garment dyeing machines.

UNIT - IV Printing 9

Methods of printing: Principles of block, batik, flat-bed, rotary screen and transfer printing; study of chest printing machine for knitted goods, Digital printing.

Styles of printing: Principles of direct, discharge and resist styles of printing; printing with reactive dyes and pigments.

Computer colour matching: Principles of computer colour matching system; pass/fail decision making.

Colour fastness: Assessment of colour fastness of dyed goods to washing, rubbing, light and perspiration.

Banned dyes and Chemicals.

Dyeing and Printing faults: Dyeing and printing faults.

Fabric Finishes: Basic principles of calendaring, raising, sanforising, compacting of knitted fabric and softening finish.

LIST OF EXERCISES

1. Bleaching of cotton using hydrogen peroxide. (1 session)
2. Dyeing of cotton with M brand reactive dyes. (1 session)
3. Dyeing of silk / wool with acid dyes (1 sessions)
4. Printing of fabric (Screen, block and resist) (1 session)
5. Printing of fabric (tie & dye, batik, transfer) (1 session)
6. Determination of colour fastness to washing, rubbing and light fastness. (2 sessions)
fabric – To be added in testing laboratory.

Total: 75 hours (45 L + 30 P)

TEXTBOOKS

1. Koushik C. V., and Antao Irwin Josico, “Chemical Processing of Textiles – Grey Preparation and Dyeing” – NCUTE Publication, New Delhi, 2004 (Units 1, 2 and 5)
2. Shenai V. A., “Technology of Finishing”, Sevak Publications, Mumbai, 1995, Nitra, “Pollution Control in Textile”
3. D G Dugg and S Sinclair, “Giles's Laboratory Course in Dyeing”, Woodhead Publishing Limited (Fourth edition) December 1989

REFERENCES

1. Shenai V. A., “Technology of Textile Processing – Vol. III, IV, V, VII and VIII”, Sevak Publications, Mumbai, 1995
2. Palmer John W., “Textile Processing and Finishing Aids: Recent Advances”, Mahajan Book Distributors, 1996
3. Ronald James W., “Printing and Dyeing of Fabrics and Plastics”, Mahajan Book Distributors, 1996
4. Sivaramakrishnan C. N. “ A compilation of 10 papers”, Colorage
5. L. W. C Wiles, “Textile Printing”, Merrow Monographs. Textile Technology.

COURSE OUTCOMES:

At the end of the study of this course the students will be able to,

1. Classify and define the fashion, art and design related terms.
2. Describe different types of fashion and life cycles of fashion.
3. Design the elements and principles of the design, with the effects in the apparel.
4. Stretch an account of the various concepts of colour theory and the applications of colours.
5. Develop a theme and prepare a portfolio.

UNIT I INTRODUCTION TO FASHION ART DESIGN 9

Definition: Fashion, Art, Design, Costume and Clothing

Origin and history: Fashion, Art, Design, Clothing and costumes; Importance of Clothing; Types of clothing, Factors to be considered in the selection of clothing.

UNIT II CLASSIFICATION AND TYPES OF FASHION 9

Nature of Fashion: Principles of Fashion, Classification of fashion

Movements on Fashion: Fashion cycle, Stages of fashion cycle, Length of fashion cycle business of fashion, theories of Fashion; Fashion trends, Boutique, Haute Couture

Study of leading fashion designers: French, Italian, American, Indian and English, Role of Fashion Designers, Types of designers

UNIT III ELEMENTS OF DESIGN 9

Introduction: Garment Design: structural t design and decorative t design

Elements of design: Line, Size, Shape, Texture, Form, Colour and light - effects of elements in the apparel. Silhouettes, types and their application

Principles of Design: Introduction to principles of designs - Balance, Proportion, Emphasis, Rhythm, Harmony. Illusion effects, Principles on functionality and aesthetics

UNIT IV COLOUR 9

Colour Theories: Primary, secondary, tertiary, intermediate colours

Color Scheme: colour contrast and colour harmony

Dimensions of colours: Hue, Value and intensity, Warm and cool colours, psychology of colours, application of colours to different components and seasons.

Fashion Illustration: Illustration techniques, strokes, hatching, shading.

Colouring techniques: Media for colouring, Rendering techniques for different fabrics (Plain, Chambrey, Satin, Denim, Velvete, Fur).

Portfolio presentation: Designer boards, Mood board, Fabric board, Colour board, Illustration board, accessory board practicalities and style of presentation,.

Total: 45 Hours

TEXT BOOKS

1. Marian L Davis, “**Visual Design and Dress**”, Third edition, Prentice Hall, New Jersey, 1996.
2. Elaine Stone, “**Fashion Merchandising – An Introduction**”, McGraw-Hill 5th Edition, 1990

REFERENCES

1. Anderson B and Anderson C, “**Costume Design**”, Harcourt Brace Second Edition, 1990.
2. Caroline Tatham and Julian Seaman, “**Fashion Designing and Drawing course**” Thames and Hudson Publishers, 2003.
3. Harrold Carr, “**Fashion Design and Product Development**” John Wiley and Sons Inc. New York, 1992.
4. Ralph Lauren, “**In His Own Fashion**”, [Alan Flusser](#) 2019.

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Describe the various pattern making tools in the workroom and the measuring techniques
2. Explain the method of drafting basic body slopers and types of fullness
3. Explain the various types of seams, seam finishes, stitches and sewing threads
4. Describe the pattern drafting and construction procedure for different types sleeves and collars
5. Explain the types and techniques involved in the construction of garment closures

Unit -I Measurements and Workroom Practices 8

Flow process chart of garment manufacturing.

Pattern: Definition, Importance, Types: basic pattern, working pattern and production pattern

Pattern making: Definition, Techniques: drafting and draping, Merits and demerits. Pattern making tools and workroom terms and definitions. Types: Industrial and bespoke patterns.

Figure analysis: Head theory: Seven and Half and Eight.

Measuring techniques: Introduction; Standard Measurement charts for male, female and kids, Body measurements: circumference measurement, Vertical measurements and horizontal measurements.

Unit -II Block preparation and Fullness 10

Drafting of basic bodice, Skirt blocks and sleeve

Fullness: Definition types, Darts—single, Double, Pointed darts, Tucks- pin tucks, Cross tucks, Piped tucks, Shell tucks, Pleats,- knife pleats, Box pleats, Invertible box pleats, Kick pleats, Flare, Godets, Gathers, Shirrings, Single and Double frills. **Dart manipulation:** Pivotal method, Slash and spread method, designing with fullness.

Unit III Seams and Stitches 9

Seams: Definition, Federal classification of seams, Seam quality, Seam performance, Factors to be considered in the selection of Seam, Seam finishes.

Stitches: Definition, Federal classification of Stitches, Stitch parameters, Factors to be considered in the selection of stitches.

Sewing thread: Selection of sewing thread for woven and knitted garments.

Unit -IV Sleeves and Collars 10

Sleeves: Drafting and construction of Set-in-sleeves: Plain, Puff, Bell, Circular and Leg-o-mutton; Sleeves combined with bodice: Kimono and Raglan.

Collars: Drafting and construction of Convertible, Shirt, Mandarin, Peter pan, Sailor, Shawl and Notch collar.

Introduction and construction techniques of garment closures: Applications of zippers, Types of button and button holes and their applications, Types and applications of hooks and eye snaps; Velcro, Eyelets, Cords.

Total: 45 hours

TEXT BOOKS

1. Helen Josep Armstrong “**Pattern Making for Fashion Design**” 5 th Edition, Prentice Hall, New Jersey , 2014.
2. Marie Clayton, “**Ultimate Sewing Bible – A Complete Reference with Step-by-Step Techniques**”, Collins & Brown, London, 2008.
3. Claire Schaeffer, “**The Complete Book of Sewing Shortcuts**”, Sterling Publishing (NY), 2009.

REFERENCE BOOKS

1. Winifred Aldrich, “**Pattern Cutting for Menswear**”, 4th edition, Blackwell Science Publisher, USA, 2006.
2. Winifred Aldrich, “**Metric Pattern Cutting**”, Blackwell Publishing, , 2008.
3. Claire Shaeffer, “**Sewing for Apparel Industry**”, Prentice Hall, 2000.
4. Cooklin Gerry, “**Garment Technology for Fashion Designers**”, Blackwell Science Ltd., 1997.
5. Laing, Webster J “**Stitches and Seams**” Woodhead Publishing Ltd., 1998.
6. Leila Aitken, “**Step by Step Dress Making Course**”, BBC Books, 1992.

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Draft and construct samples for basic blocks, seam and seam finishes and fullness.
2. Draft and construct samples for sleeves and collars.
3. Solve real time problem related to pattern making and construction of blocks, seams, fullness, sleeves and collars.

List of Experiments**Drafting and construction of following components**

1. **Bodice blocks, Skirt blocks and sleeve block** (2 sessions)
2. **Seam and Seam Finishes** (1 session)
3. **Fullness:** Darts, Tucks and Pleats (1 session)
4. **Sleeves:** Plain, Puff and Raglan (1 session)
5. **Collars:** Shirt, Peter pan, Sailor and Shawl (1 session)

Total: 30 hours

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Develop the basic creative and manipulative skills necessary for fashion design through various shading techniques and Sketching various elements and principles of designing and Draw fashion figures and visually communicate apparel design details, understanding of the color theory using various color schemes and Illustrate different styles of garment components and reproduce it to fit fashion figures
2. Develop basic fashion figure models and design various fashion designs using software
3. Illustrate different fashion figures incorporating all the illustrating techniques and designing high end fashion garments

LIST OF EXPERIMENTS**Manual Practice**

1. Illustration of lines and strokes using pencil shading techniques; lettering and numbering styles
2. Illustration of human body shapes (Indian and International standards)
3. Illustration of human face
4. Illustration of different postures of human head, hand, leg and feet
5. Illustration of different hair styles
6. Sketching of lay figure using head theory
7. Preparation of Prang's colour wheel
8. Preparation of different colour schemes
9. Rendering different fabric textures

Digital Practice

10. Illustration of sleeves, cuffs, necklines, skirts, pockets, trousers, and skirt tops
11. Illustration of elements and principles of design
12. Draping of garments for men, women and kids on fashion figure
13. Designing of accessories for men, women and kids.
14. Development of flat sketches for men, women and kids.
15. Development of technical pack.

Total: 60 hours

Semester-III	U19 GE301- SOFT SKILLS AND APTITUDE – I	L	T	P	C	Marks
		0	0	2	1	100
Course Outcomes						
At the end of the course the student will be able to:						
1. Demonstrate capabilities in specific soft-skill areas using hands-on and/or case-study approaches						
2. Solve problems of greater intricacy in stated areas of quantitative aptitude and logical reasoning						
3. Demonstrate higher levels of verbal aptitude skills in English with regard to specific topics						
1.Soft Skills	Demonstrating soft-skill capabilities with reference to the following topics:					
	<ul style="list-style-type: none"> a. Attitude building b. Dealing with criticism c. Innovation and creativity d. Problem solving and decision making e. Public speaking f. Group discussions 					
2. Quantitative Aptitude and Logical Reasoning	Solving problems with reference to the following topics:					
	<ul style="list-style-type: none"> a. Vedic Maths: Fast arithmetic, multiplications technique, Criss cross, Base technique, Square root, Cube root, Surds, Indices, Simplification. b. Numbers: Types, Power cycle, Divisibility, Prime factors & multiples, HCF & LCM, Remainder theorem, Unit digit, highest power. c. Averages: Basics of averages and weighted average. d. Percentages: Basics of percentage and Successive percentages. e. Ratio and proportion: Basics of R &P, Alligations, Mixture and Partnership. f. Profit ,Loss and Discount: Basic & Advanced PLD g. Data Interpretation: Tables, Bar diagram, Venn diagram, Line graphs, Pie charts, Caselets, Mixed varieties, Network diagram and other forms of data interpretation. h. Syllogism: Six set syllogism using Venn diagram and tick and cross method 					
3. Verbal Aptitude	Demonstrating English language skills with reference to the following topics:					
	<ul style="list-style-type: none"> a. Verbal analogy b. Tenses c. Prepositions d. Reading comprehension e. Choosing correct / incorrect sentences f. Describing pictures g. Error spotting 					

S. Anand

Department of Placement Training
Sona College of Technology.
Salem-636 005.

SEMESTER – III

MANDATORY COURSE

U19GE304- CONSTITUTION OF INDIA

(Common for MCT and FT)

Course Outcomes

L	T	P	C
2	0	0	0

At the end of the course, the students will be able to

1. demonstrate a capacity to work efficiently and with critical engagement with complex and sophisticated primary constitutional law texts
2. exhibit the capacity to craft coherent and persuasive constitutional law arguments in an adversarial context ,also recognizing the limitations of such argumentation
3. apply a contextual understanding of (i) the function of the High Court as the final arbiter of constitutionality and (ii) the techniques of judicial review as applied
4. practice a thorough and contextual knowledge of constitutional law doctrine particularly in its application to real or hypothetical constitutional law problems
5. demonstrate a high level of skill on academic and professional legal writing

UNIT – I Introduction to Constitution of India

6

Constitutional law – meaning – importance

Constitutionalism – features – elements

Constitution of India – concept – importance – historical perspective – characteristics

UNIT – II Fundamental Rights and Equality

6

Fundamental rights – scheme – benefits

Fundamentals duties – importance – and its legal status

UNIT – III Structure, Policies, Principles

6

State policy – the directive principles and its importance-The implementation of directive principles- Parliamentary form of government in India- Constitution power and status of the President- Federal structure and distribution of legislative

UNIT –IV Emergency rule

6

Financial powers between the union and the states- Amendment of the constitutional powers – procedure- Emergency provisions : articles of Indian constitution that has provisions to proclaim emergency- Emergency powers of President – national emergency President rule, financial emergency

UNIT – V Types and Concepts of Local Self Government

6

The concept of local self –government and its types

Comparison of the Indian constitutional scheme

20.05.2020

B.E. / B.Tech. Regulations 2019

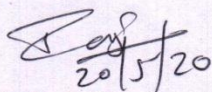
Directive principles of state policy and fundamental duties noted in the Indian constitution

Scheme of the fundamental rights to certain freedom under Article 19
Scope of the right to life and personal liberty under Article 21

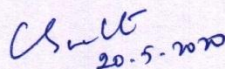
References:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015.
3. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
4. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.

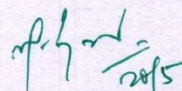
Total: 30 HOURS



Dr. M. Raja
Course Coordinator / Sciences



Dr. C. Shanthi
HOD / Sciences



Dr. M. Renuga
Chairperson B.O.S,
Science and Humanities.

20.05.2020

B.E. / B.Tech. Regulations 2019

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester IV under Regulations 2019
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	U19GE402	Mandatory Course: Environment and Climate Science	2	0	0	0
2	U19FT401	Pattern Making and Garment Construction - II	3	0	0	3
3	U19FT402	Garment Production Machinery and Equipment (Lab Integrated)	3	0	2	4
4	U19FT403	Problem Solving using Python Programming (Lab Integrated)	3	0	2	4
5	U19FT404	Textile and Apparel Quality Evaluation	3	0	0	3
6	U19FT405	Textile Materials for Fashion Design	3	0	0	3
Practical						
7	U19FT406	Pattern Making and Garment Construction Laboratory – II	0	0	2	1
8	U19FT407	Textile and Apparel Quality Evaluation laboratory	0	0	2	1
9	U19GE401	Soft Skills and Aptitude – II	0	0	2	1
10	U19FT408	Mini Project - I	0	0	2	1
11	U19FT409	In-Plant Training	2 Weeks			1
Total Credits						22

Approved By

Chairman, Fashion Technology BoS
Dr.D.Raja

Member Secretary, Academic Council
Dr.R.Shivakumar

Chairperson, Academic Council & Principal
Dr.S.R.R.Senthil Kumar

Copy to:-

HOD/Fashion Technology, Fourth Semester B.Tech FT Students and Staff, COE

TEXT BOOKS

1. Marie Clayton, “**Ultimate Sewing Bible – A Complete Reference with Step-by-Step Techniques**”, Collins & Brown, London, 2008.
2. Clair B. Shaeffer “**The Complete Book of Sewing Shortcuts**” Sterling Publishing Company, 1981.

REFERENCE BOOKS

1. Claire Shaeffer, “**Sewing for Apparel Industry**”, Prentice Hall, 2000.
2. Cooklin Gerry, “**Garment Technology for Fashion Designers**”, Kindle edition., 2011.
3. Leila Aitken, “**Step by Step Dress Making Course**”, BBC Books, 1992.
4. Peg couch “**Illustrated Guide to Sewing: Garment Construction**”, fox chapel publishing, 2011
5. Anette Fischer “**Construction for Fashion Design (Basics Fashion Design)**”, Bloomsbury, 2017

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Explain different methods of spreading of fabrics with respect to type of fabric.
2. Describe the types and functions of various fabric cutting machines.
3. Explain the functions of primary and auxiliary parts of sewing machine.
4. Elucidate the working principles of over lock and flat lock sewing machine.
5. Explain the functions and working principles of special purpose sewing machines.
6. Identify the major parts and various setting points in garment manufacturing machines.
7. Perform threading sequence of various stitching machines.

UNIT I Spreading 8

Spreading: Types of fabrics: One way, two way fabrics, their effect on spreading. Methods of fabric spreading, spreading equipment, computerized spreaders, marker planning, marker efficiency, factors affecting marker efficiency, marker duplicating methods and computer aided marker planning, types of fabric packages.

UNIT II Cutting Machines 8

Introduction to cutting machines: Types and functions of cutting machines, straight knife, round knife, band knife cutting machines, notches, drills, die cutting machines, computerized cutting machines. Maintenance of cutting machines, common defects in cutting and their remedies.

UNIT III Sewing Machine - SNLS 10

Basic parts of sewing machine: Primary and auxiliary part and their functions, bobbin case / bobbin hook, throat plate, take up devices, tensioners, feed dog, pressure foot. Types of needle, parts of needle and their function, needle finishes. Adjustments of stand height, pedal, needle bar, stitch length selection, feed timing, needle and bobbin thread tension, stitch cycle timing diagram. Common defects and remedies. Special attachments in sewing machines: guides, folders, stackers, trimmers, ziggers. Different machine brands.

UNIT IV Multi Thread Sewing Machines 10

Over lock machines: Types of over lock machines, parts and their functions. Threading diagram of over lock machines. Adjustment of needle height, feed dog height, angle, differential feed ratio, position of upper and lower knives, loopers. Defects and remedies.

Flat lock machines: Types, parts and their functions. Threading diagram of flat lock machines. Adjustment of parts: Needle height, feed dog height, differential feed ratio, loopers. Maintenance of flat lock machines. Defects and Remedies.

UNIT V Special Purpose Sewing Machines 9

Introduction to different special purpose sewing machines: Basic working of feed of arm, button hole sewing, button sewing, bar tack, blind stitch machines. Embroidery sewing machines. **Seam sealing machine.** Latest developments in sewing machines. Sewing machine maintenance, maintenance schedule for various machines.

Total: 75 hours

LIST OF EXERCISES

1. Identify the single needle lock stitch machine parts, study various setting points, perform threading, prepare samples by using various folders and calculate the SPI for specified/chosen stitch length. (1 sessions)
2. Identify an over lock machine parts, study various setting points, adjustments for needle-thread, looper thread tension, feed-ratio, needle and looper setting and knife setting. perform threading, prepare stitch sample and calculate the SPI for given stitch length. (2 sessions)
3. Identify the flat lock machine parts, study various setting points, making adjustments of the needle-thread and looper-thread tension, feed-ratio, needle-and-looper setting and spreader setting. Perform threading, prepare stitch sample and calculate the SPI for given stitch length. (2 sessions)
4. Identify the button sewing and buttonhole machine parts, study various setting points, perform threading and prepare stitch sample. (2 sessions)
5. Identify the Feed-off arm and Bar tack machine parts, study various setting points, perform threading and prepare stitch sample. (2 sessions)

TEXTBOOKS

1. Carr and Latham's "**Technology of Clothing Manufacture**" Revised by David J.Tyler, Blackwell Publishing, 2008.
2. Laing R.M., Webster J, "**Stitches and Seams**", TheTextile Institute, Manchester, UK, 2009.
3. Rathnamoorthy.,R,Surjith, "Apparel Machinery And Equipments", WoodHead Publishing Indian in Textiles,2015

REFERENCES

1. Shaeffer Claire, "**Sewing for the Apparel Industry**", Prentice Hall, New Jersey, 2001.
2. Singer Sewing Reference Library, "**Sewing Lingerie**", CyDeCosse Incorporated, Minnesota, 1991.
3. Jacob Solinger, "**Apparel Manufacturing Handbook**", Reinhold Publications, 1998.

Garment Production Machinery and Equipment (Lab Integrated)

List of equipment required for a batch of 30 students

S. No.	Name of the equipment / software	Quantity Required
1	Single Needle Lock Stitch Machine	30
2	Over lock machine	3
3	Flat lock machine	2
4	Button sewing machine	1
5	Button Hole machine	1
6	Feed - off the arm machine	1
8	Bar tack sewing machine	1
	Total	39

COURSE OUTCOME:

At the end of course, the students will be able to

1. Develop algorithmic solutions to simple computational problems
2. Write simple Python programs
3. Write programs with the various control statements and handling strings in Python
4. Develop Python programs using functions and files
5. Analyze a problem and use appropriate data structures to solve it.

CO/PO, PSO Mapping													
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak													
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)												
	PO1	PO2	PO 3	PO4	PO 5	PO 6	PO 7	PO 8	P09	PO10	PO12	PSO1	PSO2
CO1	3	3	3	3									3
CO2	2	3	3	3	3								3
CO3	2	3	3	3	3								3
CO4	2	3	3	3	3								3
CO5	2	3	3	3	3								3

UNIT I Algorithmic Problem Solving 9

Need for computer languages, Algorithms, building blocks of algorithms (statements, state, control flow, functions), notation (pseudo code, flow chart, programming language), algorithmic problem solving, simple strategies for developing algorithms (iteration, recursion).

UNIT II Basics of Python Programming 9

Introduction-Python Interpreter-Interactive and script mode -Values and types, variables, operators, expressions, statements, precedence of operators, Multiple assignments, comments, input function, print function, Formatting numbers and strings, implicit/explicit type conversion.

UNIT III Control Statements and Strings 9

Conditional (if), alternative (if-else), chained conditional (if-elif-else). Iteration-while, for, infinite loop, break, continue, pass, else. Strings-String slices, immutability, string methods and operations.

UNIT IV Functions and Files 9

Functions - Introduction, inbuilt functions, user defined functions, passing parameters - positional arguments, default arguments, keyword arguments, return values, local scope, global scope and recursion. Files -Text files, reading and writing files.

UNIT V Data Structures: Lists, Sets, Tuples, Dictionaries

9

Lists-creating lists, list operations, list methods, mutability list functions, searching and sorting, Sets-creating sets, set operations. Tuples-Tuple assignment, Operations on Tuples, lists and tuples, Tuple as return value- Dictionaries-operations and methods, Nested Dictionaries.

Theory: 45 Hours

Tutorial: -

Practical: -

TOTAL: 45 Hours

TEXT BOOK

1. Reema Thareja, "**Problem Solving and Programming with Python**", Oxford University Press, 2018.
2. Allen B. Downey, "**Think Python: How to Think Like a Computer Scientist**", 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016 (<http://greenteapress.com/wp/think-python/>)

REFERENCES

1. Ashok Namdev Kamthane, Amit Ashok Kamthane, "**Programming and Problem Solving with Python**", Mc-Graw Hill Education, 2018.
2. Robert Sedgewick, Kevin Wayne, Robert Dondero, "**Introduction to Programming in Python: An Inter-disciplinary Approach**", Pearson India Education Services Pvt. Ltd., 2016.
3. Timothy A. Budd, "**Exploring Python**", Mc-Graw Hill Education (India) Private Ltd., 2015.
4. Kenneth A. Lambert, "**Fundamentals of Python: First Programs**", CENGAGE Learning, 2012.
5. Charles Dierbach, "**Introduction to Computer Science using Python: A Computational Problem Solving Focus**", Wiley India Edition, 2013.

LIST OF EXPERIMENTS

1. Draw flowchart using any open source software.
2. Implement programs with simple language features.
3. Implement various branching statements in python.
4. Implement various looping statements in python.
5. Develop python programs to perform various string operations like concatenation, slicing, indexing.
6. Implement user defined functions using python.
7. Implement recursion using python.
8. Develop python programs to perform operations on list and tuples
9. Implement dictionary and set in python
10. Implement python program to perform file operations.

Theory: -

Tutorial: -

Practical: 30 Hours

TOTAL: 30 Hours

Problem Solving using Python Programming (Lab Integrated)

List of equipment required for a batch of 30 students

S. No.	Name of the equipment / software	Quantity Required
1	Computers (Pentium i5)	30
Total		30

COURSE OUTCOMES

At the end of the study of the course the student should be able to,

1. Elucidate the various principles and methods are used for yarn properties testing.
2. Describe the different methods and procedure is used for fabric testing properties.
3. Discuss the basic terms and definition of apparel testing and methods of evaluation.
4. Discuss the basic terms and definition and procedures of Quality, Inspection Quality Assurance and Control forms.
5. Elaborate on the quality control for Fabrics, QC in Garment Manufacturing Processes, Quality Standards and Tolerances.

UNIT I **Fibre and Yarn Testing** **9**

Fibre Testing: Testing of cotton using the rapid fibre testing methods, high Volume Instrument (HVI) and AFIS.

Yarn count and Strength: Definitions of count, yarn numbering system, determination of yarn count using wrap reel. **Count Strength Product and single yarn strength.**

Yarn Twist: Definitions of twist, determination of twist of single and ply yarn.

Yarn Evenness and Hairiness: Yarn appearance board winder. Classification of variations in yarn, methods of measuring yarn evenness and hairiness, Uster evenness tester.

Unit II **Fabric Testing** **9**

Fabric Strength Testing: Fabric tensile strength tester, tearing strength tester, hydraulic bursting strength tester.

Fabric Performance Testing: Martindale abrasion resistance tester. **Fabric pilling:** ICI pillbox tester.

Fabric Drape and Stiffness: Definition of drape and stiffness, drape meter, Shirley stiffness tester, fabric crease resistance and crease recovery tester.

Fabric Permeability: Terms in air permeability and water permeability tester. MVTR, MMT, thermal conductivity and resistance, liquid penetration.

UNIT III **Apparel Testing** **8**

Seam Strength: Definition of seam strength, seam puckering, seam slippage and evaluation of interlining quality. Standards for above testing methods.

Apparel testing: Dimensional stability, durable press evaluation, Snap / button pull strength testing. Testing procedures for various functional finishes like anti-microbial, flame retardant.

Quality: Introduction, definition, control of quality and its necessity.

Inspection: Importance of inspection, types of inspection: raw material inspection, in-process inspection, final inspection, 100% inspection, sampling inspection, comparison of 100% and sampling inspections. AQL Standards, basic calculations, self-inspection method. definition of minor, major and critical faults.

UNIT V Quality Control and Quality Standards**10**

QC for fabrics: Quality control for knitted and woven fabrics, types of defects in fabrics, major, minor and critical faults, fabric inspection system, 4 point and 10 point system.

Quality assurance: Definition, differences between quality assurance and inspection, inspection agencies. Control forms.

Quality Standards and Tolerances: Quality standards and tolerances and for fabrics, spreading, cutting, stitching in garment industry, tolerances and quality standards for finished garments. Quality assurance system and standards for packing and packed goods.

TOTAL: 45 hours**TEXT BOOKS**

1. Angappan P and R.Gopalakrishnan , “**Textile Testing**”-S.S.M.I.T.T Co-op stores Ltd.,2007.
2. Koushik C.V. and R. Chandrasekaran, “**Textile Testing**”-NCUTE publication, New Delhi, 2004.
3. Jacob Solinger, “**Apparel Manufacturing Handbook**”, Prentice Hall, New Jersey, 1993.

REFERENCES

1. J. E. Booth, “**Principles of Textile Testing**”, CBS Publishers and Distributors, New Delhi, 1996.
2. B. P. Saville, “**Physical Testing of Textiles**”, CRC Woodhead Publishing, New Delhi 1999.
3. V.K. Kothari, “**Quality Control and Testing Management**”, IAFL Publications, New Delhi, 1999.
4. Samuel Eilon, “**Production Planning and Control**”, Macmillan, New York, 1962.
5. Grover E. G. and Hamby D. S., “**Hand Book of Textile Testing and Quality Control**”, Wiley Eastern Pvt. Ltd., New Delhi, 1969.
6. Pradip V. Mehta, “**An Introduction to Quality Control for the Apparel Industry**”, Dekker, 1992.

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Explain about role of textiles in fashion
2. Describe about design features, properties and applications of woven fabrics.
3. Describe about design features, properties and applications of knitted and nonwoven fabrics.
4. Describe about design features, properties and applications of embellished fabrics in fashion
5. Describe about design features, properties and applications of speciality fabrics in fashion

UNIT I Role of Textiles in Fashion**9**

Role of textiles in fashion designing, different types of textile materials used in fashion designing: raw material, construction, structure and quality, its properties and application, sources of fabric, choice of fabrics for regular and functional garments, factors influencing the selection of fabric for specific end use.

UNIT II Woven Fabrics in Fashion**9**

Design, properties, applications and commercial names of plain, twill, stain, sateen, crepe, gauze, Bedford cord, leno, pile, gauze, dobby, jacquard, brocade, extra warp, extra weft fabrics and double cloth.

UNIT III Knitted and Nonwoven Fabrics in Fashion**9**

Design, properties, applications and commercial name of jersey, rib, interlock, purl, pique, lacoste weft knitted fabrics.

Design, properties, applications and commercial name full tricot, lock knit, reverse lock knit, satin, shark skin, queen's cord warp knitted fabrics.

Design, properties, applications and commercial name needle punched, melt blown, spun bond nonwoven fabrics.

UNIT IV Embellished Fabrics in Fashion**9**

Design, properties, applications and commercial name of ikkat, bhandhini, batik dyed textiles,

Design, properties, applications and commercial name of batik, stencil, block, screen and transfer printed textiles,

Design, properties, applications and commercial name of kalamkari and spray painted textiles,

Design, properties, applications and commercial name of hand and machine embroidered textiles

UNIT V Speciality fabrics in Fashion**9**

Design, properties, applications and commercial name of full grain, bonded, tanned, Suede, embossed leather.

Design, properties, applications and commercial name of coated fabrics for mobility, outdoor & lifestyle, interior design, industrial & protective and exterior application

Design, properties, applications and commercial name of composites, laminated, brushed, lace, stretch, and fur fabrics

Total Hours: 45

TEXTBOOKS:

1. Clive Hallett, Fabric for Fashion: The Complete Guide: Natural and Man-made Fibers Paperback, Laurence King Publishing, 2014
2. Clive Hallett and Amanda Johnston, Fabric for Fashion: A Comprehensive Guide to Natural Fibres, Laurence King Publishing, 2010

REFERENCES:

1. Gail Baugh , The Fashion Designer's Textile Directory: The Creative Use of Fabrics in Design, Thames and Hudson Ltd, 2011
2. Stefanella Sposito , Fabrics in Fashion Design: The Way Successful Fashion Designers Use Fabrics, Promopress, 2017

COURSE OUTCOMES

At the end of the study of this course the students will be able to

1. Draft and construct samples for Placket, Necklines and Pockets.
2. Draft and construct for children's garments like body suit, Romper, Frock and Drape for basic bodice and skirt.
3. Solve real time problem related to pattern making and construction of components, garments and draping

LIST OF EXPERIMENTS**I. Drafting and construction of following components**

1. Plackets – Continuous bound placket, 2 piece placket and Tailored Placket (1session)
2. Necklines – Bias facing, Shaped facing and Bias binding (1session)
3. Pockets –Patch pocket, set in seam pocket and Bound pocket (1 sessions)

II. Drafting and construction of following garments

4. Children's body/sleep suit(1session)
5. Children's rompers(1session)
6. Children's frock(1session)

III. Drape bodice and skirt (1session)

Total: 30 hours

PATTERN MAKING AND GARMENT CONSTRUCTION LABORATORY II

List of equipment required for a batch of 30 students for U.G

S. No.	Name of the equipment / software	Quantity Required	Additional tools issued to individual students
1.	Cork Top Tables	15	L - scale
2.	Dress forms		Hip curve
3.	Male : 40"chest full	1	Meter Scale
4.	Male : 42"chest full	1	French Curve
5.	Male : adjustable half	1	Tracing wheel
6.	Male : 40"chest half	1	Measuring tape
7.	Female : 32.5" bust half	1	Tailor's Chalk
8.	Female : 32.5" bust full	1	Paper cutting scissors
9.	Female : 34.5" bust full	1	Fabric cutting scissors
10.	Female : 36.5" bust full with hand	1	1/4 th Paper Scale
11.	Female : adjustable half	1	
	Mannequins		
12.	i. Baby		
	Boy – 80.5 cm	1	
	Girl – 88.8 cm	1	
	ii. Teenage Girls & Boys		
	Boy – 139 cm	1	
	Girl – 139cm	1	
	iii. Adults		
	Male -186 cm	1	
	Male -182.5 cm	1	
	Female -157.6 cm	1	
	Female -186 cm	1	
	Jewellery bust half head	1	
	Jewellery bust Indian face	1	
	Jewellery hand	2	
13.	Single-needle lock-stitch machine	30	
14.	Steam Iron	3	
15.	Fusing Machine	1	
16.	Ironing Table	1	
	Total	71	

COUR SE OUTCOMES

At the end of study of this course the students will be able to,

1. Determine the count, strength and the appearance of the yarn.
2. Determine the physical and dimensional properties of the fabric.
3. Evaluate the garment qualities like dimensional stability, seam properties of the garment.

LIST OF EXPERIMENTS

1. Determination of yarn count, lea strength and CSP. (1 session)
2. Determination of fabric tensile strength and seam strength properties. (1 session)
3. Determination of fabric abrasion resistance and pilling tendency of the fabric. (1 session)
4. Determination of colour fastness to light, washing and rubbing. (1 session)
5. Determination of fabric bursting and tearing strength of the fabric. (1 session)
6. Determination of drape coefficient of fabric by using drape meter. (1 session)
7. Determination of air permeability and wickability of fabric testing. (1 session)
8. Analyses of Seam puckers and thread consumption for a given garment. (1 Session)
9. Analyse the given fabric and garment defects using standards and suggest causes and remedies. (1 session)
10. Determination of Button Pull Strength and dimensional stability of the garment. (1 session)

Total: 30 hours

TEXTILE AND APPAREL QUALITY EVALUATION LABORATORY

List of equipment required for a batch of 30 students

S. No.	Name of the equipment / software	Quantity Required
1.	Electronic Balance	1
2.	Automatic Wrap Reel	1
3.	Lea Strength tester	1
4.	Yarn appearance tester	1
5.	Single yarn twist tester	1
6.	Fabric tensile strength tester	1
7.	Double yarn twist tester	1
8.	Martindale abrasion tester	1
9.	Fabric bursting strength tester	1
10.	Fabric stiffness tester	1
11.	Fabric crease recovery tester	1
12.	Drape meter	1
13.	Beesley's Balance	4
14.	Air-permeability tester	1
15.	Course length tester	1
16.	Crimp tester	2
17.	Single yarn strength tester	1
18.	Wash fastness tester	1
19.	Rubbing fastness tester	1
20.	Light fastness tester	1
Total		24

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Identify case study and innovative ideas related to the subjects learnt in the current semester.
2. Execute a mini project related to the case study and innovative ideas identified by the students.
3. Function effectively on teams and to communicate effectively and develop report with results and conclusion of the mini project work.

The students should complete the following tasks:

- Identify and finalise the mini project members.
- Identify a guide for their mini project and select an area to solve a research or industry problems.
- Developing a scope for their mini project that will include objectives, budget, timeline and any other variables.
- Survey of literature
Once the plan is ready for the mini project, the next step is to refer journals, past work related to their mini projects and other sources to compile information about the work already done in the specified area.
- Preparing work plan for the mini project.
- Execution of mini project as per the work plan.
- Report preparation for the work executed by them.

REVIEWS TO MONITOR THEIR WORK PROGRESS

- An appointed committee of faculty will review the progress of the mini project three times in the semester at periodic interval before final viva.
- The final viva will be conducted by the appointed committee of an external and an internal faculty.

Total: 30 hours

2 weeks during vacation leave

COURSE OUTCOMES

At the end of the study of this training, the students will be able to

1. Get training in real world of production and process in the apparel and related industries.
 2. Understand the entire process in detail.
 3. Identify the problems in the industry by observation.
 4. Prepare an in-plant training report
-
- The students have to undergo a 2-week in-plant training related to the subject learnt in the immediately preceding semesters.
 - Industry mentor and institute mentor will be allotted to the students in the inplant training.
 - Students have to submit weekly progress report regularly which will be compiled by the institute mentor and submitted to HOD.
 - The students have to submit a report of their in-plant training with photos.
 - Students have to submit a certificate provided by the industry for two weeks.
 - A committee of three staff members as internal examiner and an external examiner will conduct a Viva voce and evaluate student performance.
 - Students successfully completing the 2-week in-plant training will be awarded one credit.

Semester – IV	U19GE401 SOFT SKILLS AND APTITUDE – II	L	T	P	C	Marks
		0	0	2	1	100
Course Outcomes						
At the end of the course the student will be able to:						
1. Demonstrate capabilities in additional soft-skill areas using hands-on and/or case-study approaches						
2. Solve problems of increasing difficulty than those in SSA-I in given areas of quantitative aptitude and logical reasoning and score 65-70% marks in company-specific internal tests						
3. Demonstrate greater than SSA-I level of verbal aptitude skills in English with regard to given topics and score 65-70% marks in company-specific internal tests						
1.Soft Skills	Demonstrating soft-skill capabilities with reference to the following topics:					
	<ul style="list-style-type: none"> a. SWOT b. Goal setting c. Time management d. Stress management e. Interpersonal skills and Intrapersonal skills f. Presentation skills g. Group discussions 					
2. Quantitative Aptitude and Logical Reasoning	Solving problems with reference to the following topics:					
	<ul style="list-style-type: none"> a. Equations: Basics of equations , Linear, Quadratic Equations of Higher Degree and Problem on ages. b. Logarithms, Inequalities and Modulus c. Sequence and Series: Arithmetic Progression, Geometric Progression, Harmonic Progression, and Special Series. d. Time and Work: Pipes & Cistern and Work Equivalence. e. Time, Speed and Distance: Average Speed, Relative Speed, Boats & Streams, Races and Circular tracks and Escalators. f. Arithmetic and Critical Reasoning: Arrangement, Sequencing, Scheduling, Network Diagram, Binary Logic, and Logical Connection. h. Binary number System.- Binary to decimal, Octal, Hexadecimal 					
3. Verbal Aptitude	Demonstrating English language skills with reference to the following topics:					
	<ul style="list-style-type: none"> a. Critical reasoning b. Theme detection c. Verbal analogy d. Prepositions e. Articles f. Cloze test g. Company specific aptitude questions 					

MANDATORY COURSES

Sona College of Technology, Salem

Department of Sciences (Chemistry)

SEMESTER – IV

MANDATORY COURSE

U19GE402 - ENVIRONMENT AND CLIMATE SCIENCE

(Common for MCT, IT, FT, ECE and BME)

L T P C
2 0 0 0

Course Outcomes:

At the end of the course, the student will be able to

1. state the importance of the acute need for environmental awareness and discuss significant aspects of natural resources like forests, water and food resources.
2. explain the concepts of an ecosystem and provide an overview of biodiversity and its conservation.
3. explain environmental based pollution their causes, effects and their remedial measures
4. discuss their causes, effects and the control measures of Global Warming, Acid Rain, Ozone Layer Depletion
5. describe the effect of climate change due to pollution

UNIT I INTRODUCTION TO ENVIRONMENTAL STUDIES AND NATURAL RESOURCES **6**

Definition, Scope and Importance Forest Resources:- Use and over - exploitation, deforestation, Case Studies, Water Resources:- Use and Over-Utilization of Surface and ground water , Floods, Drought, Food Resources- Effects of Modern Agriculture, Fertilizer- Pesticide Problems–Role of an Individual in Conservation of Natural Resources.

UNIT II ECOSYSTEMS AND BIODIVERSITY **6**

Structure and Function of an Ecosystem– Energy Flow in the Ecosystem -Food Chains, Food Webs and Ecological Pyramids.

Introduction to Biodiversity –Value of Biodiversity: Consumptive Use, Productive Use, Social, Ethical, Aesthetic and Option Values –India as a Mega-Diversity Nation — Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts – Endangered and Endemic Species of India – Conservation of Biodiversity: In-Situ and Ex-Situ conservation of Biodiversity.

UNIT III ENVIRONMENTAL POLLUTION **6**

Definition – Causes, Effects and Control Measures of:- (A) Air Pollution (B) Water Pollution (C) Soil Pollution (D) Marine Pollution (E) Noise Pollution (F) Thermal Pollution, Solid Waste Management- Effects and Control Measures of Acid Rain,– Role of an Individual in Prevention of Pollution..

23.01.2021

B.E. / B.Tech. Regulations 2019

UNIT IV CLIMATE CHANGE ON THE ENVIRONMENT

6

Sustainable Development- - Climate Change- Causes and effects of Global Warming - Effect of global warming in food supply, plants, sea, coral reef, forest, agriculture, economy - Kyoto Protocol in reduction of greenhouse gases - Ozone Layer Depletion - mechanism, effects and control measures- Montreal Protocol to protect ozone layer depletion - Rain Water Harvesting - .Effect of climate change due to air pollution Case study - CNG vehicles in Delhi

UNIT V EFFECT OF CLIMATE CHANGE ON POLLUTION

6

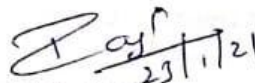
Fungal diseases in forests and agricultural crops due to climatic fluctuations - Growing energy needs - effect of climate change due to non-renewable energy resources. Renewable energy resources in the prevention of climatic changes- Effect of climatic changes in ground water table, garments, monuments, buildings. consumption of energy, agriculture and in electric power sector - Carbon credit - carbon footprint - disaster management -Role of an individual to reduce climate change.

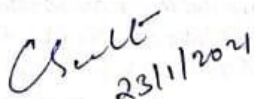
TOTAL: 30 HOURS**Text Books:**

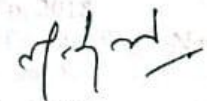
1. Miller, T.G. Jr., "Environmental Science", Wadsworth Pub. Co. 2018
2. Anubha Kaushik and Kaushik, "Environmental Science and Engineering" New Age International Publication, 4th Multicolour Edition, New Delhi, 2014.

References:

1. S. Radjarejesri et al., "Environmental Science" Sonaversity, Sona College of Technology, Salem, 2018.
2. Masters, G.M., "Introduction to Environmental Engineering and Science", Pearson Education Pvt., Ltd., 2nd Edition, 2004.
3. Erach, B., "The Biodiversity of India", Mapin Publishing P.Ltd., Ahmedabad, India.
4. Erach Bharucha, "Textbook of Environmental Studies for Undergraduate Courses", 2005, University Grands Commission, Universities Press India Private Limited, Hyderguda, Hyderabad - 500029.


 Dr. M. Raja
 Course Coordinator / Sciences


 Dr. C. Shanthi
 HOD / Sciences


 Dr. M. Renuga
 Chairperson BOS,
 Science and Humanities

23.01.2021

B.E. / B.Tech. Regulations 2019

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester V Regulations 2019
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Theory							
1	U19FT501	Apparel Manufacturing	3	0	0	3	45
2	U19FT502	Apparel Production Planning and Control	3	0	0	3	45
3	U19FT503	Apparel Merchandising (Lab Integrated)	3	0	2	4	75
4	U19FT504	Functional Garments	3	0	0	3	45
5	noc21-mg88	Elective- (NPTEL) - Principles of management	3	0	0	3	12 weeks
6	U19FT910	Elective – Home Textiles	3	0	0	3	45
Practical							
7	U19FT505	Apparel Manufacturing Laboratory	0	0	2	1	30
8	U19FT506	Digital Pattern Development and Marker Planning Laboratory	0	0	2	1	30
9	U19GE501	Soft Skills and Aptitude – III	0	0	2	1	30
10	U19FT507	Mini Project-II	0	0	2	1	30
11	U19FT508	In-Plant Training	2 Weeks			1	2 weeks
Total Credits						24	

Approved By

Chairperson, Fashion Technology BoS

Dr.D.Raja

Member Secretary, Academic Council

Dr.R.Shivakumar

Chairperson, Academic Council & Principal

Dr.S.R.R.Senthil Kumar

Copy to:-

HOD/Fashion Technology, Fifth Semester B.Tech FT Students and Staff, COE

At the end of the study of this course the students will be able to,

1. Explain the fundamental concepts of measurement for children's garment, draft the pattern and construct the garment and enumerate the factors affecting the selection of fabrics, trimmings, seams used in children's wear, explain the method of fabric consumption and check the fit of the garment.
2. Explain the procedure involved in drafting and construction of men's wear, state the method followed in minimising the fabric used and check the fit of the garment.
3. Draft and construct men's suit and analyse the principles of fit, explain the method to judge the fit of the men's suit'.
4. Analyse the importance and method of taking measurement for women's garment, Design and explain pattern drafting and construction of women's wear and explain the process involved in minimizing fabric consumption for women's wear.
5. Design intimate apparels and check its fitting, explain the procedure involved in drafting and construction of lingerie and state the importance of elastomeric yarns and its application in the manufacture of lingerie.

CO/PO, PSO Mapping

(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	2	3	1		1				2	3	3	3
CO2	2	3	3	2	3	1		1				3	3	3	3
CO3	2	3	3	3	2	1		1				2	3	3	3
CO4	1	3	3	2	3	1		1				3	3	3	3
CO5	2	3	3	3	2	1		1				2	3	3	3

UNIT I MEASUREMENT FOR CHILDREN'S GARMENTS

9

Measurement for Children's Garments: Measurement required for construction of children's garments. Step by step procedure for pattern drafting, construction, minimizing fabric consumption and checking the fit for children's wear- body suit, baby frock, shorts, rompers, pedal pushers. Factors affecting selection of fabrics, trimmings, seams used in children's wear.

UNIT II MEN'S WEAR

9

Step by step procedure for pattern drafting, construction and minimizing fabric consumption for men's casual wear, formal wear, work wear and under clothing. Check the fit of the garments.

Casual wear : T-Shirts, Bermudas, Pyjamas, Boxer shorts, Cargos

Formal wear : Formal shirts, Formal trousers

Work wear : Dungarees and overalls

Inner Wear : Vests and briefs

UNIT III MEN'S FORMAL WEAR

9

Men's Formal Wear: Step by step procedure for pattern drafting: construction and minimizing fabric consumption, principles of fit for men's suits: 2 piece and 3 piece suits, single and double breasted suits.

UNIT IV WOMEN'S WEAR

9

Women's Wear: Measurement required for construction of women's garments. Step by step procedure for pattern drafting, construction and minimizing fabric consumption for women's wear.

Casual wear : Night wear

Traditional wear : Salwar kameez, Chudidhar

Western wear : Ladies tops, Formal trousers, Skirts: 'A' line, Umbrella, six gore, Circular skirt.

UNIT V LINGERIE

9

Lingerie: Intimate apparels, different types of fitting for ladies inner wear, step by step procedure of drafting and construction of stretch fabrics, step by step procedure of construction of brassiers, size and fit, ladies panties, other lingerie's, use of elastomeric yarns in lingerie.

TOTAL: 45 HOURS

TEXT BOOKS

1. Patrick John Ireland, "Fashion Design Illustration: Men", B.T Batsford Ltd., London, 1996.
2. Gerry Cooklin, "Pattern Grading for Children's Clothes", Om Book Service, New Delhi, 1991.
3. Harold Carr and Barbara Latham, "The Technology of Clothing Manufacture", Blackwell Science Inc., Oxford, 1994.
4. Singer Sewing Staff, "Sewing Lingerie", CyDeCosse Incorporated, Minnetonka, 1991.

REFERENCES

1. Singer Sewing Staff, "Sewing Active Wear", Creative Publishing International Editors, 1986.
2. Singer Sewing Staff, "Sewing Pants That Fit", Cowles Creative Publishing Inc., 1989.
3. Gerry Cooklin, "Garment Technology for Fashion Designers", Blackwell Science, Oxford, 1997.

COURSE OUTCOMES

At the end of the study of the course, the student will be able to,

1. Explain the functions and techniques involved in production and pre-production activities.
2. Describe the lay planning and bundle ticket process in apparel production.
3. Analyse types of production system and operation break down for various garments.
4. Compare the types of capacity, capacity planning and line balancing in cutting, sewing and finishing.
5. Analyse the production planning tools and its implementation in garment industry.

CO/PO, PSO Mapping

(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	1	1	1	1	1	1	1	1	1	1	3	1	1
CO2	1	3	2	2	1	2	1	1	1		1	1	2	1	1
CO3	1	2	3	2	2	2			1		2		3	2	2
CO4	3	3	1	3	3	2			1		1		2	2	1
CO5	2	2	2	2	1	1			1		3		2	2	2

UNIT I INTRODUCTION**9**

Production: Definition, Terminology, Functions of production department, Duties and responsibilities of a production manager / supervisor.

Pre-production activities: Lead time, Product development steps from a prototype to the production model, Product data management and detailed interpretation of specification sheets.

UNIT II LAY PLANNING AND BUNDLE TICKETS**8**

Lay planning: Lay lot planning, numerical exercises on lay lot planning, shrinkage allowance.

Bundle Tickets: Importance and guidelines, sorting and bundling, move ticket, barcode and RFID Technology.

UNIT III PRODUCTION SYSTEMS AND OPERATION SEQUENCE**10**

Production systems: Whole garment production system, batch production system, straight line production system, unit production system, quick response production system, modular production system.

Operation breakdown: T- shirt, men's full sleeve shirt, trousers, jeans, ladies night dress, shorts, machines and attachment details.

UNIT IV CAPACITY CALCULATION AND LINE BALANCING**9**

Types of Capacity: Committed capacity, Available capacity, Potential capacity, Required capacity, Excess capacity.

Capacity calculation: Cutting, sewing and finishing, analysis of man - machine requirements for a given target. Case Study.

Line balancing: Importance, techniques and line balancing matrix, TAKT time analysis. Case Study.

UNIT V PRODUCTION PLANNING TOOLS**9**

Principles of scheduling: Scheduling charts, GANTT chart, backlog graph, CPM and PERT analysis.

Line Planning: Multi-style planning, evaluation of plant layout, pitch time analysis, production grid.

Production Monitoring Tools: Daily and monthly production report, Daily and monthly production analysis, Daily and monthly production charts.

TOTAL: 45 HOURS**TEXT BOOKS**

1. Cooklin Gerry, "Introduction to Clothing Manufacture", Blackwell Science Ltd., Oxford, 2006.
2. Ruth E. Glock and Grace I. Kunz, "Apparel Manufacturing: Sewn Product Analysis", Fourth Edition, Pearson Education, New Delhi, 2005.

REFERENCES

1. Chuter A. J., "Introduction to Clothing Production Management", Blackwell Science Publishing, 1995.
2. Harold Carr and Barbara Latham, "The Technology of Clothing Manufacture", Om Book Service, New Delhi, 1995.
3. Jacob Solinger, "Apparel Production Handbook", Van Nostrand Reinhold Publications, New York, 1998.

(Lab integrated course)

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Describe the apparel merchandising and various types of merchandising
2. Discuss the roles of merchandiser and time management in merchandising
3. Calculate the apparel pricing and sourcing
4. Analyse types of costs and elements of cost
5. Choose appropriate the apparel raw material for end uses and calculate CMT cost
6. Determination of costing for the given garments
7. Perform the merchandising plan for the given work order
8. Development of proto sample for the given specifications

CO/PO, PSO Mapping

(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	2	2	2	2	3	2	2	3	3	2
CO2	3	3	3	3	3	1	1		2	3	3	2	3	3	2
CO3	2	3	2	3	2	1	2	1	1	2	2	1	3	2	2
CO4	1	3	3	3	3		2	1	1	2	2	1	3	1	1
CO5	1	3	3	3	3		1			1	3	1	3	3	1
CO6	1	3	3	3	3	1	1	1	3	3	3	3	3	3	3
CO7	1	3	3	3	3	1	1	1	3	3	3	3	3	3	3
CO8	1	3	3	3	3	1	1	1	3	3	3	3	3	3	3

UNIT I MERCHANDISING**9**

Apparel Merchandising: Definition, functions of merchandising department, responsibilities of merchandiser. Steps involved in receiving an order, purchase order and specification sheet analysis, sampling procedure, interfacing merchandising with other departments in an apparel organization, terminologies used in merchandising

Types of Merchandising: Principles and techniques of apparel merchandising, retail merchandising, visual merchandising, fashion Merchandising

UNIT II ROLES OF MERCHANDISER**9**

Roles of Merchandiser: Line planning-Introduction, fashion forecasting, apparel line and seasons. Steps and techniques in fashion forecasting, Market research, consumer research, product research, Fashion research, trend research, colour research, line Development- Fabric and trims selection, prototyping, pre-costing, final product development. Line presentation, Line Adoption, market/customer profiling. Specific roles of buying house, production and retail house merchandisers.

UNIT III PRICING AND SOURCING**9**

Pricing: Pricing theory, factors affecting price structure in apparel.

Sourcing: Definition, role of merchandiser in sourcing, sourcing process. Need and important factors in sourcing, methods of sourcing raw materials, international and domestic sourcing centers, sourcing of accessories, manufacturing resource planning, sourcing lead time, supplier types, vendor management, JIT technology.

UNIT IV INTRODUCTION TO COST ACCOUNTING**9**

Cost: Principles of cost. Types of cost: Fixed cost, Variable cost, Semi variable cost, Conversion cost, Differential cost **Elements of cost**, Direct material cost, Direct expenses, Direct wages - Indirect materials - Indirect expenses, Indirect labour , Overheads, Production overhead , Administrative overhead , Selling and distribution overhead , Components of cost sheet, Break even analysis.

UNIT V MATERIAL AND CMT COST**9**

Factors that Determine the Price of Garments: Material cost, Cost of yarn, Cost of fabric production, Cost of processing. Factors that affect cost of garment, width, design and lot size. Cutting, Making and Trim cost (CMT cost) for different types of woven and knitted garments - Waste minimisation in garment production.

LIST OF EXERCISES

1. Prepare the Merchandising plan for the given work order.
2. Development of proto sample by using buyer's measurement (specification sheet) and calculate the costing.
3. Determination of CMT costing for the given baby frock
4. Determination of CMT costing for the given men's shirt and trouser
5. Determination of CMT costing for the given T shirt.
6. Determination of CMT costing for the given ladies top and skirt.
7. Prepare the cost sheet and BOM for the given style of garment.

TOTAL: 75 HOURS

TEXT BOOKS

1. Moore Evelyn C., "Path for Merchandising- A Step by Step Approach", Thames and Hudson Ltd., London, 2001.
2. Vijay Barotia, "Marketing Management", Mangal Deep Publication, New Delhi, 2001.
3. R.Rathinamoorthy, R.Surjit, "Apparel Merchandising", Woodhead Publishing Limited,2019
4. M.Krishnakumar, "Apparel Merchandising : An Integrated Approach", Abhishek Publications, 2010

REFERENCES

1. Jarnow J. and Dickerson K. G., "Inside the Fashion Business", Prentice Hall, New Delhi, 1997.
2. Laine Stone and Jean Samples, "Fashion Merchandising", McGraw Hill Books, Singapore, 1985.

APPAREL MERCHANDISING

(Lab integrated course)

List of equipment required for a batch of 30 students

S. No.	Name of the equipment / software	Quantity Required
1	Single needle Lock Stitch Machine	30
2	Beesley balance	4
3	GSM cutter	2
	Total	36

COURSE OUTCOMES

At the end of study of this course the students will be able to,

1. Explain the characteristics, classification of functional garments, market size, and functional garments for medical and chemical field.
2. Explain requirements, selection and development of sportswear, and development of camouflage garments.
3. Apply the concept and develop wearable electronics and space suit garments.
4. Analyse the techniques involved in the manufacture of high altitude garments, high visibility garments and chromic textiles.
5. Evaluate the applications, manufacture and its performance of bullet proof vests, cut resistant, vehicle armour clothing and flame resistant textiles.

CO/PO, PSO Mapping

(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	3	2	3	2					1	3	2	1
CO2	3	3	3	2	2	3						1	3	3	1
CO3	2	2	2	2	3	2	1					2	2	2	1
CO4	1	3	2	3	1		2					1	2	3	1
CO5	2	3	2	3	1	3	1					3	3	3	2

UNIT I INTRODUCTION AND FUNCTIONAL GARMENTS FOR MEDICAL AND CHEMICAL FIELD**9**

Functional Garments: Introduction, characteristics and classification of functional garments. Size and future growth prospects of world and Indian market of functional garments.

Surgical, intelligent functional and therapeutic clothing: Fibre requirements, characteristics, design and development process of functional garments used for medical application.

Biological and chemical protection clothing: Fibre requirements, design and development process of functional garments used in biological and chemical protection.

UNIT II SPORTS WEAR AND CAMOUFLAGE GARMENTS**9**

Sportswear: Functional requirements, fibre selection, fabric properties and finishing requirements, ease and comfort, dry-fit garments, importance of moisture management behaviour and applications in sportswear.

Camouflage Textiles: Requirements- fibre and fabric, applications, materials and development process of camouflage clothing for military applications.

UNIT III WEARABLE ELECTRONICS AND GARMENT

9

Wearable Clothing: Principle and design of wearable garments, Requirements of fibre and fabrics, characteristics, flexible wearable electronics in fabrics, wearable sensors, bio monitoring devices. Interfacing circuits and garments. Application of wearable electronics. Design features, comfortness, challenges and limitations of electronics wearable garments. Principle and design of space suit garments.

UNIT IV GARMENTS FOR CHROMIC TEXTILES, HIGH ALTITUDES AND VISIBILITY GARMENTS

9

Chromic Textiles: Principles of thermo chromic and photo chromic textiles and outline of manufacturing process. Application of chromic textiles in fashion.

High altitudes garments: Requirements, characteristics, fibres, yarn and fabrics, component materials and development of garments for protection against extreme weather conditions.

High Visibility Clothing: Requirements of fibres, characteristics, applications, materials and manufacturing process of high visibility garments.

UNIT V DEFENCE CLOTHING

9

Ballistic protection and bullet proof vest: Introduction, concept of ballistic protection, fibres, yarns and fabrics for ballistic protection, manufacture, testing and evaluation of bullet proof vests.

Cut resistant and vehicle armour clothing: Need and requirements, materials, influencing factors, development process, testing and evaluation of cut resistant and vehicle armour clothing,

Flame resistant garments: Requirements, materials, design and development, testing and evaluation of flame resistant garments.

TOTAL: 45 HOURS

TEXT BOOKS

1. Horrocks A.R. and Anand S.C., "Handbook of Technical Textiles", Wood head Publishing Limited, Cambridge, UK, 2012.
2. Anand S.C., Kennedy J.F., Miraftab M. and Rajendran S., "Medical Textiles and Biomaterials for Health Care", Wood head Publishing Limited, Cambridge, UK, 2006.

REFERENCES

1. Adanur S., "Wellington Sears Handbook of Industrial Textiles", Technomic Publishing Co. Inc., 2017
2. Pushpa Bajaj and Sengupta A.K., "Protective Clothing", the Textile Institute, 1992.
3. N.Pan and G.Sun., "Functional Textiles for improved performance, protection and health Part-1 and Part-2", Wood head Publishing series in textiles, 2011.
4. Mc Cann J. and Bryson D., "Smart Clothes and Wearable Technology", Wood Head Publishing Series in Textiles, UK, 2010, ISBN-10: 1845693574
5. Xiaoming Tao, "Wearable Electronics and Photonics", The Textile Institute, CRC press, Manchester, 2005
6. Roshan Shishoo, "Textiles for Sportswear", Wood head Publishing series in textiles, 2015
7. L.Ashok kumar & C.Vigneswaran, "Electronics in Textiles and Clothing – Design, Products and Applications", CRC Press, Coimbatore, 2015

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Explain the method of taking measurements for men's wear and describe the process involved in pattern making and the construction.
2. Design women's wear and method of taking measurements for women's wear and describe the process involved in pattern making and the construction.
3. Analyse the construction sequence of men's wear and women's wear for any given measurement.

CO/PO, PSO Mapping

(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	1				2		2	3	2	1
CO2	2	3	3	3	3	1				2		2	3	2	1
CO3	1	3	3	3	2	1				1		1	3	3	3

LIST OF EXPERIMENTS**Construction of****Men's casual wear:**

1. Men's Bermudas (1session)
2. Men's T-Shirt (1 session)

Men's inner garments:

3. Briefs and vests (1 session)

Men's formal wear

4. Men's formal shirt (1 sessions)
5. Men's formal trousers (1 sessions)

Women's casual wear

6. Ladies Salwar and Kameez (1 session)
7. Ladies Chudidhar (1 session)
8. Ladies Night Dress (1 sessions)

Women's traditional wear

9. Ladies Sari Blouse (1 sessions)

Women's western wear

10. Ladies Top and Skirt (1 session)

Women's lingerie

11. Ladies Brassiere and Panties (1 session)

TOTAL: 30 HOURS

APPAREL MANUFACTURING LABORATORY

List of equipment required for a batch of 30 students for U.G

S. No.	Name of the equipment / software	Quantity Required	Additional tools issued to individual students
1.	Cork Top Tables	15	L - scale
2.	Dress forms		Hip curve
3.	Male : 40" chest full	1	Meter Scale
4.	Male : 42" chest full	1	French Curve
5.	Male : adjustable half	1	Tracing wheel
6.	Male : 40" chest half	1	Measuring tape
7.	Female : 32.5" bust half	1	Tailor's Chalk
8.	Female : 32.5" bust full	1	Paper cutting scissors
9.	Female : 34.5" bust full	1	Fabric cutting scissors
10.	Female : 36.5" bust full with hand	1	1/4 th Paper Scale
11.	Female : adjustable half	1	
	Mannequins		
12.	i. Baby		
	Boy – 80.5 cm	1	
	Girl – 88.8 cm	1	
	ii. Teenage Girls & Boys		
	Boy – 139 cm	1	
	Girl – 139cm	1	
	iii. Adults		
	Male -186 cm	1	
	Male -182.5 cm	1	
	Female -157.6 cm	1	
	Female -186 cm	1	
	Jewellery bust half head	1	
	Jewellery bust Indian face	1	
	Jewellery hand	2	
13.	Single-needle lock-stitch machine	30	
14.	Steam Iron	3	
15.	Fusing Machine	1	
Total		70	

COURSE OUTCOMES

At the end of the study of this course, the students will be able to,

1. Create fashion drawings for children's, ladies and men's garments using a computer and related software
2. Draft the patterns, grade and generate marker plan
3. Develop fashion drawings for patterns, grade and generate marker plan for the given wear

CO/PO, PSO Mapping

(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	1	1	3							3	3	3	2
CO2	2	1	1	1	3							3	3	3	2
CO3	2	1	1	1	3							3	3	3	2

1. Practice of pattern making and grading software features. (2 sessions)
2. (i) Development of design, pattern and pattern grade for children's frock.
(ii) Preparation of marker plan.
(iii) Calculation of marker efficiency for one-way fabric of varying fabric width. (1session)
3. (i) Development of design, pattern and pattern grade for children's body suit.
(ii) Preparation of marker plan.
(iii) Calculation of marker efficiency for one-way fabric of varying fabric width. (1session)
4. (i) Development of design, pattern and pattern grade for baby romper.
(ii) Preparation of marker plan.
(iii) Calculation of marker efficiency for two-way fabric of 38" and 42" width. (1session)
5. (i) Development of design, pattern and pattern grade for ladies top.
(ii) Preparation of marker plan.
(iii) Calculation of marker efficiency for plaid fabric of 44" and 52" width. (1session)
6. (i) Development of design, pattern and pattern grade for ladies party wear.
(ii) Preparation of marker plan.
(iii) Calculation of marker efficiency for plaid fabric of 44" and 52" width. (1session)

7. (i) Development of design, pattern and pattern grade for ladies skirt.
(ii) Preparation of marker plan.
(iii) Calculation of marker efficiency for corduroy fabric of 38" and 60" width and develop a lay lot plan. (1session)
8. (i) Development of design, pattern and pattern grade for men's full-sleeve shirt.
(ii) Preparation of marker plan for checked fabric of 52" and 60" width.
(iii) Calculation of marker efficiency and development of lay lot plan. (1session)
9. (i) Development of design, pattern and pattern grade for men's formal trousers.
(ii) Preparation of marker plan for pencil stripe fabric of 60" and 72" width.
(iii) Calculation of marker efficiency and development of lay lot plan. (1session)
10. (i) Development of design, pattern and pattern grade for men's formal shorts.
(ii) Preparation of marker plan for pencil stripe fabric of 60" and 72" width.
(iii) Calculation of marker efficiency and development of lay lot plan. (1session)

TOTAL: 30 HOURS

DIGITAL PATTERN DEVELOPMENT AND MARKER PLANNING LABORATORY

List of equipment required for a batch of 30- students

S. No.	Name of the equipment / software	Quantity Required
1.	Computers-Pentium IV	30
2.	Scanner	1
3.	Printer	1
4.	Pattern Drafting, Grading and Marker Planning Software -Tuka CAD	1
5.	Pattern Drafting, Grading, Marker Planning and 3D Designing Software -Lectra software	30
Total		63

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Identify case study and innovative ideas related to the subjects learnt in the current semester.
2. Execute a mini project related to the case study and innovative ideas identified by the students.
3. Function effectively on teams and to communicate effectively and develop report with results and conclusion of the mini project work.

CO/PO, PSO Mapping															
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak															
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3
CO3	3	3	3	3	3	3	2	3	3	3	3	2	3	3	3

The students should complete the following tasks:

- Identify and finalise the mini project members.
- Identify a guide for their mini project and select an area to solve a research or industry problems.
- Developing a scope for their mini project that will include objectives, budget, timeline and any other variables.
- Survey of literature
Once the plan is ready for the mini project, the next step is to refer journals, past work related to their mini projects and other sources to compile information about the work already done in the specified area.
- Preparing work plan for the mini project.
- Execution of mini project as per the work plan.
- Report Preparation for the work executed by them.

REVIEWS TO MONITOR THEIR WORK PROGRESS

- An appointed committee of faculty will review the progress of the mini project three times in the semester at periodic interval before final viva.
- The final viva will be conducted by the appointed committee of an external and an internal faculty.

TOTAL: 30 HOURS

COURSE OUTCOMES

At the end of the study of this training, the students will be able to

1. Get training in real world of production and process in the apparel and related industries.
2. analyse the entire process in detail.
3. Identify the problems in the industry by observation and attempt to give solution and prepare an in-plant training report

CO/PO, PSO Mapping

(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2	2		2	2		2	2	1	1	2	2	2
CO2	1	3	1	3		3	3		2	1	1	1	2	2	2
CO3	1	3	1	3		3	1		1	1	1	1	2	2	2

- The students have to undergo a 2-week in-plant training related to the subject learnt in the immediately preceding semesters.
- Industry mentor and institute mentor will be allotted to the students in the in-plant training.
- Students have to submit weekly progress report regularly which will be compiled by the institute mentor and submitted to HOD.
- The students have to submit a report of their in-plant training with photos.
- Students have to submit a certificate provided by the industry for two weeks.
- A committee of three staff members as internal examiner and an external examiner will conduct a Viva voce and evaluate student performance.
- Students successfully completing the 2-week in-plant training will be awarded one credit.

2 weeks during vacation leave



NOC21-MG88 - PRINCIPLES OF MANAGEMENT

Prof. Susmita Mukhopadhyay,
Associate Professor,
VGSOM (Ph.D., Calcutta University,
Fellow ISI, Kolkata)
IIT Kharagpur.

TYPE OF COURSE: New / Elective / UG
COURSE DURATION: 12 weeks (26 Jul 21 – 15 Oct 21)
EXAM DATE: 24 Oct 2021

Prof. Srinivasan
Assistant Professor
Vinod Gupta School of Management,
IIT Kharagpur.

PREREQUISITES : None

INTENDED AUDIENCE : Everyone who is interested to get acquainted with the terms, concepts, and points of view used in management and its historical evolution, ethics, social responsibility and environmental issues.

INDUSTRY SUPPORT : All industry. Knowing the terms, concepts, and points of view used in management and its historical evolution, ethics, social responsibility and environmental issues is essential for smooth running of organization and proper organizational functioning.

COURSE OUTLINE

The objective of this course is to acquaint students with the terms, concepts, and points of view used in management and its historical evolution, ethics, social responsibility and environmental issues; provide students with a working knowledge of the skills and functions necessary to be an effective, efficient manager; provide an introduction to the theory and practice of managing organizations; examine the management functions (planning, organizing, leading or influencing, and controlling) and the impact of those functions on the business organization

ABOUT INSTRUCTOR

Susmita Mukhopadhyay's areas of specialization include Human Resource Management and Industrial Psychology, Business Values and Ethics, and Organizational Behaviour. A gold medalist in M.Sc., she is the

recipient of the Young Scientist Award and Search of Excellence Award. She was selected for the Microfinance Researchers Alliance Fellow Program Centre for microfinance, Institute of Financial Management and Research, Chennai, in 2009.

Srinivasan is an Assistant Professor at Vinod Gupta School of Management, IIT Kharagpur. He teaches Organization Behavior and Human Resource Management. He received his Ph.D. in OB & HR from IIT Madras in 2018. He was a recipient of the DAAD Fellowship. He is a certified Labor and ESH compliance auditor. He has audited several factories for established European and American Brands. Prior to joining Ph.D. program, he was a research associate in a collaborative research project between IIT Madras and the University of Guelph, Canada. He was engaged in socio-economic impact assessment with NTPC.

COURSE LAYOUT

- Week 1:** **Management:** Definition, nature, purpose and scope of management, Skills and roles of a Manager, functions, principles; Evolution of Management Thought, Scientific Management.
- Week 2:** **Planning:** Types of plans, planning process, Characteristics of planning, Traditional objective setting, Strategic Management, premising and forecasting
- Week 3:** **Decision-Making:** Process, Simon’s model of decision making, creative problem solving, group decision making.
- Week 4:** **Management by Objectives:** Management by exception; Styles of management: (American, Japanese and Indian), McKinsey’s 7-S Approach, Self Management
- Week 5:** **Organizing:** Organizational design and structure, Coordination, differentiation and integration.
- Week 6:** Span of management, centralization and de-centralization Delegation, Authority & power - concept & distinction, Line and staff organizations
- Week 7:** **Staffing:** Human Resource Management and Selection, Performance appraisal and Career strategy, Coordination- Concepts, issues and techniques
- Week 8:** **Organizational Change:** Introduction, Resistance to Change, Behavioural Reactions to Change, Approaches Or Models to Managing Organisational Change.
- Week 9:** **Organizational Change:** Introduction, Resistance to Change, Behavioural Reactions to Change, Approaches Or Models to Managing Organisational Change.
- Week 10:** **Leading:** Human Factors and Motivation, Leadership, Communication, Teams and Team Work
- Week 11:** **Leading:** Human Factors and Motivation, Leadership, Communication, Teams and Team Work
- Week 12:** **Controlling:** Concept, planning-control relationship, process of control, Types of Control, Control Techniques Characteristics of team

HOME TEXTILES**COURSE OUTCOMES**

At the end of the study of this course the students will be able to,

1. Define and classify home textiles, explain the type of fabric used for home textiles and eco-friendly textiles, describe the special finishes and surface ornamentation on home textile products and explain Indian home textiles industry and its future prospects and latest development in home textile products.
2. List and explain the types of furnishings used for different interiors- and enumerate the factors influencing the selection of home furnishings for different interiors, describe the usage of furnishing for different workplaces.
3. Analyse the types, features and end use of different types of floor coverings and list the factors influencing the selection of different floor covering and its maintenance.
4. Analyse the types, choice of fabrics, material required for construction of curtains and draperies for different types of windows and doors.
5. Analyse the types and end uses of furnishings used for home decorations, upholsteries, explain bed linens, table linens, kitchen linen, bath linens, and hotel and hospital linens.

CO/PO, PSO Mapping

(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	1		1	2					1	2	3	1
CO2	3	3	3	2	3	1	1			2	1	2	1	3	1
CO3	3	3	3	2	3	1	1			2	1	2	1	3	1
CO4	3	3	3	2	3	1	1			2	1	2	1	3	1
CO5	1	3	3	1	3	1	1			1		1	3	3	1

UNIT I INTRODUCTION

9

Definition and classification: Definition and classification of home textiles: woven, nonwoven and knitted fabrics, eco-friendly home textiles, special finishes and surface ornamentation on home textile products, Indian home textiles industry and its future prospects, latest development in home textile products, requirements of fabric particulars for home textiles.

UNIT II DRAWING ROOM, DINING ROOM AND KITCHEN FURNISHINGS

9

Types of Drawing Room, Dining Room and Kitchen Furnishings: Materials, designs and styles: Selection of various decorative and appealing products, table cloths, table mats, table skirting, table runners, napkins, curtains, sofa covers, cushion covers, chair covers, chair mats, chair pads, tea mats, tea cozy, aprons, kitchen towels, mittens, napkins, place mats, dish cloths, pot holders. Sample development procedure and preparation of samples.

UNIT III FLOOR COVERINGS

9

Types of Floor Coverings: Hard floor covering: types, features and end uses. Soft floor covering: types, features and end uses. Resilient floor covering: types, features and end uses. Factors influencing the selection of different floor covering and its maintenance. Sample development procedure and preparation of samples.

UNIT IV BEDROOM AND BATHROOM FURNISHINGS

9 Types of Bedroom and

Bathroom Furnishings: Materials, designs and styles: Selection of various decorative and appealing products, throws, bed covers, cushion covers, pillow covers, quilt covers, duvet covers, blankets covers, bed sheets, bed spreads, bed skirts, bed coverlets, bed comforts, mattress covers, bath towels, bathroom mats. Sample development procedure and preparation of samples.

UNIT V LIVING ROOM AND IN-HOUSE LINEN

9

Types of Living Room and In-House Linen: Different styles, and use of colours, design and texture in home furnishing. Developments in living room furnishing including upholstery, wall hanging, bolster and bolster covers, throws, classification and types, table linens, kitchen linen, bath linens, hotel and hospital linens. Sample development procedure and preparation of samples.

TOTAL: 45 HOURS

TEXT BOOKS

1. Gopalakrishnan, D and T Karthik, :Home Textiles”, Daya Publishing House, 2016.
2. Subrata Kumar Das, “Performance of Home Textiles” ((2nd Edition),Woodhead Publishing India Pvt. Ltd, 2017.

REFERENCES

1. Alexander N. G., “Designing Interior Environment, Mas Court Brace Covanorich”, New York, 1972.
2. V. Ramesh Babu and S. Sundaresan, “Home Furnishing”, Woodhead Publishing India Pvt. Ltd, 2017.
3. Donserkery K. G., “Interior Decoration in India”, D. B. Taraporevala Sons and Co. Pvt Ltd., Mumbai, 1973.
4. Das, Subrata. Performance of home textiles. WPI Publishing, 2010.

Semester –V	U19GE501 : SOFT SKILLS AND APTITUDE - III	L	T	P	C	Marks
		0	0	2	1	100
Course Outcomes						
At the end of the course the student will be able to:						
1. Demonstrate capabilities in supplementary areas of soft-skills and job-related selection processes using hands-on and/or case-study approaches						
2. Solve problems of advanced levels than those in SSA-II in specified areas of quantitative aptitude and logical reasoning and score 70-75% marks in company-specific internal tests						
3. Demonstrate greater than SSA-II level of verbal aptitude skills in English with regard to given topics and score 70-75% marks in company-specific internal tests						
1.SOFT SKILLS	Demonstrating soft-skill capabilities with reference to the following topics:					
	a. Career planning: Importance; Exploring various career options, Field research, Social media management; Process, benefits and limitations of career planning; Mapping SWOT and GOALS to career planning; Self-evaluation					
	b. Resume writing : Build credentials and resume, Positioning yourself and your career, JD mapping, Video resume, Relevant resume phrases and components; Cover letter; Portfolio management and Social media cover					
	c. Group discussion : Skills needed for GD; Frequently Asked topics and Practice; Types of topics; Various framework and tools to handle GD; Practice and assessment					
	d. Teamwork : Definition and importance of team-building; Stages of team-building; Communication within a team; Various styles of teams and their analysis; Activities demonstrating a team					
	e. Leadership skills : Role of a leader; Difference between a manager and a leader; Various Leadership styles; Compelling qualities of a leader; Famous leaders and their impact to the world; Self-assessment					
	f. Interview skills : Process and types of interview; Appearance and grooming etiquette; Do's and Don'ts (Before – During interview); Brainstorming interview possible questions; Hot seat; Transactional Analysis for effective communication and handling interviewers; mock interviews and assessment parameters discussion					
	g. Mock interviews : Frequently Asked Questions practice and assessment; Discussion and demonstrations on Stress and Technical interviews; Group interview					
	h. Mock GDs : Frequently Asked Topics Practice; Assessment and feedback					

<p>2. QUANTITATIVE APTITUDE AND LOGICAL REASONING</p>	<p>Solving problems with reference to the following topics :</p> <ul style="list-style-type: none"> a. Geometry: 2D, 3D, Coordinate Geometry, and Height & Distance. b. Permutation & Combinations : Principles of counting, Circular Arrangements and Derangements. c. Probability: Addition & Multiplication Theorems, Conditional Probability and Bayes Theorem. d. Statistics : Mean Median, Mode, Range and Standard Deviation. e. Interest Calculation : Simple Interest and Compound Interest f. Crypto arithmetic: Addition and Multiplication based problem. g. Logical Reasoning : Blood Relations, Directions Test, Series, Odd man out, Analogy, Coding & Decoding, Problems and Input – Output Reasoning. h. Statement & Assumptions, Statements & Arguments, Inference. i. Company Specific Pattern : Infosys and TCS company specific problems
<p>3. VERBAL APTITUDE</p>	<p>Demonstrating English language skills with reference to the following topics:</p> <ul style="list-style-type: none"> a. Subject verb agreement b. Selecting the best alternative for the stated parts of given sentences c. Reading comprehension d. Contextual synonyms e. Sentence fillers f. Writing a story for a given picture g. Company specific aptitude questions

S. Anita

Dr.S.Anita

Head/Training

**Department of Placement Training
Sona College of Technology,
Salem-636 005.**

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester VI Regulations 2019
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Theory							
1	U19FT601	Clothing Size, Fit and Comfort	3	0	0	3	45
2	U19FT602	Fashion Visual Merchandising	3	0	0	3	45
3	U19FT603	Industrial Engineering in Garment Production	3	0	0	3	45
4	U19FT911	Elective -Fashion Forecasting	3	0	0	3	45
	U19FT915	Elective -Wearable Technology					
5	U19FT918	Elective -Apparel and Fashion Marketing	3	0	0	3	45
	U19FT919	Elective -Fashion Retail Store Operations					
Open Elective							
6	U19BM1001	Hospital Management	3	0	0	3	45
	U19CE1001	Building Services and Safety Regulations					
	U19CE1003	Energy Efficiency and Green Building					
	U19CS1002	Cloud Computing					
	U19CS1004	Mobile Application Development					
	U19EC1003	Sensors and Smart Structures Technologies					
	U19EC1006	Mobile Technology and its Applications					
	U19EE1003	Innovation, IPR and Entrepreneurship Development					
	U19EE1004	Renewable Energy Systems					
U19IT1001	Problem Solving Techniques using Java Programming						

Practical							
7	U19FT604	3D Virtual Fit analysis Laboratory	0	0	2	1	30
8	U19FT605	Industrial Engineering in Garment Production Laboratory	0	0	2	1	30
9	U19GE601	Soft Skills and Aptitude – IV	0	0	2	1	30
10	U19FT606	Mini Project - III	0	0	2	1	30
Total Credits						22	

Approved By

Chairperson, Fashion Technology BoS

Dr.D.Raja

Member Secretary, Academic Council

Dr.R.Shivakumar

Chairperson, Academic Council & Principal

Dr.S.R.R.Senthil Kumar

Copy to:-

HOD/Fashion Technology, Sixth Semester B.Tech FT Students and Staff, COE

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Define anthropometry and sizing system. Explain the principles of sizing systems and also categorise the sizes for men, women and children wear.
2. Discuss about the subjective evaluation and objective evaluation of clothing fit.
3. Discuss the importance of clothing comfort and properties related to tailoring performance.
4. Elaborate the points to be kept in mind while judging physiological comfort and fitting of textile products.
5. Explain the influence of thermal comfort on selection of fabrics.

CO/PO, PSO Mapping
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO12	PSO1	PSO2	PSO3
CO1	2	1	1	3	3	3	3	3	3	3	3	3	2	2
CO2	2	3	3	3	3	3	3	3	3	3	2	3	3	2
CO3	1	3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	1	2	3	3	2	3	3	3	3	3	1	3	2	2
CO5	1	3	1	2	3	3	3	3	3	3	1	3	3	2

UNIT I Anthropometrics and Sizing Systems**9**

Basics of sizing systems: Definition, anthropometric analysis, tools used, body shape analysis, classification of body shapes, characteristic differences among figures, posture – types, figure types- vertical, horizontal, key measurements, Overcoming unrealistic body image. *Basic Statistics for size standardisation:*

UNIT II Sizing Systems and Size Standardisation**9**

Sizing systems- strength and weakness, *Need of sizing survey* Process of sizing system- importance, *Direct and Indirect ways of human body measurement, brief on advance technology such as 3-D Body scanning, undertaking the national sizing, size and shape surveys, anthropometric analysis, size analysis, key or control measurements, Sizing survey methodology, statistics used in sizing system - Measures of Central Tendency, Measures of Dispersion, Percentiles, and Normal Distribution Curve.*

Apparel size designation and labelling. *survey* Study of International sizing system: UK, US and Europe. Size categories in men's, women's and children's wear. Study of *protocols such as ISO 8559, ISO 7250, ISO 15535, and ISO 20685*

UNIT III Evaluation of Clothing Fit**9**

Fit -Definition, Importance, standards, influences of clothing fit, Methods of testing fit- fit models, fitting futures, measured methods, pinned pattern / tissue methods, trial garment, guide to fitting problems. Alternative methods for evaluating fit-using structural line, grain line, wrinkles, pinch test, inside measurement. Evaluating fit: subjective, objective, rating scales, subjective fitting guide, Objective method-moiré optics, algebraic evaluation of clothing fit, clothing waveform, pressure evaluation of clothing fit , 3D modeling of pressure fit, *3D visualization, 3 D fitting evaluation and pattern alteration using cloth and garment simulation tools - virtual try.*

UNIT- IV Clothing Comfort**9**

Comfort: Introduction to clothing comfort, types and definition, human clothing system, comfort perception and preferences, Need and selection of clothing, Components of clothing comfort, Clothing Comfort and

wearer's attitude, clothing performance characteristics: comfort, durability, hand and tailor ability, Fabric properties related to tailoring performance.

UNIT V Physiological and Thermal Comfort

9

Physiological Comfort: Concept related to physiological aspects of clothing comfort, factors affecting garment fit and comfort – air gap thickness, garment ventilation, fluctuating microclimate in loose-fit garment, garment fit and pressure sensation. Fabric properties related to fit, perspiration, tactile, fabric expansion and relaxation.

Thermal Comfort: Physical phenomena affecting thermal comfort, Effect of fabric properties on heat transfer, Moisture vapour permeability, Liquid moisture permeability and air permeability.

Total: 45 hours

TEXT BOOKS

1. Fan J., Yu .W and Hunter L., “**Clothing Appearance and Fit**”, Textile Institute, Woodhead Publishing Limited, England, 2004.
2. Das .A and Alagirumy .E, “**Science in clothing comfort**”– Wood head Publishing Ltd., 2010.
3. “**The Perfect Fit: Classic Guide to Alter Patterns**”, Creative Publishing International, USA, 2005.
4. Das A and Alagirusamy , “**Science in clothing comfort**”, Wood head publishing limited, England 2010.

REFERENCE

1. Sandra Betzina, “**Fast Fit-Easy Pattern Alterations for Every Figure**”, The Taunton Press Inc., Singapore, 2003.
2. Zakaria, Norsaadah, and Deepti Gupta, eds. “**Anthropometry, apparel sizing and design**”. Woodhead Publishing, 2019.
3. Faust, Marie-Eve, and Serge Carrier, eds. “**Designing apparel for consumers: The impact of body shape and size**”. Woodhead Publishing, 2014.
4. Gill, Simeon. “**Sizing in Clothing: Developing Effective Sizing Systems for Ready-to-wear Clothing**.” Journal of Fashion Marketing and Management: An International Journal (2008).
5. ISO 20685 – 1: 2018 - International standard for 3D scanning methodologies for international compatible anthropometric data bases for protocol for 3-D.
6. ISO 20685-2:2015(E) - Evaluation protocol of surface shape and repeatability of relative landmark position.
7. ISO 8559-1:2017 Size designation of clothes- Anthropometric definitions for body measurement.
8. ISO 7250-1:2017 Basic human body measurements for technological design -Part 1: Body measurement definitions and landmarks.
9. ISO 15535:2012(E) General requirements for establishing anthropometric databases.

RELATED JOURNALS:

1. **Journal of Textile & Apparel Technology and Management**, North Carolina, USA **International Journal**.
2. **Stitch World** - Industry magazine. (stitchworld.net).
3. **Apparel Views** magazine. (www.apparelviews.com)

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Define the significance and role of visual merchandising in a retail environment, in order to effectively present the merchandise to the consumers.
2. Classify the various elements of visual presentation and understand their significance in visually presenting a display.
3. Analyze and identify the best suitable environment for merchandise including interior and point of displays.
4. Determine the type of fixtures and mannequins for different display arrangements
5. Develop planogram and merchandise assortment planning and acquire knowledge on the various computer applications in visual merchandising.

CO/PO, PSO Mapping
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO12	PSO1	PSO2	PSO3
CO1	1	3	1	2	3				2			2	3	2
CO2	2	2	2	3	2							2	2	2
CO3	1	1	2		3							2	2	2
CO4	2	2			2							2	2	2
CO5	2	2	2		2				1	3	2	2	2	2

UNIT I Fundamentals of Visual Merchandising**9**

Definition, objectives and scope, types of display and display settings, retail stores and approaches of visual merchandising, types of retail stores, store atmospherics, approaches in visual merchandising in various stores, department store approach and small store approach. Role of Visual Merchandising in the changing face of retailing.

UNIT II Elements of Visual Presentation**9**

Introduction - Overview of the various elements, importance of store exteriors and interiors arrangements, Store front – Façade, Signs, Marquees, Outdoor lighting, Banners, Planters, Awnings, Windows and its types. Masking and proscenia, Store layout-Objectives, allocation of space, types of layouts, Utilization of store space – staircase, lifts, elevators, point of purchase display. Store line composition, Signage and graphics – need, types of signage, sign sizes, sign colors. Signage changes and updations.

PRACTICE: Development of miniature fashion retail store front using various types of visual merchandising elements.

UNIT III Store interiors, Points of Display and Display Techniques**10**

Store interior-display types and settings. Interior components – Store atmosphere, lighting, sound track and its selection, scent, ceiling, focal points, island displays, risers and platforms, the runway, counters and display cases, museum cases, demonstration cubes, ledges, shadow boxes, enclosed displays, fascia, t-walls. Point of purchase display, industrial display, fashion shows, attention getting devices, familiar symbols. Application and selection of colour, colour schemes and colour psychology to create mood in garment display.

PRACTICE: Development of miniature fashion store interior atmosphere using various types of visual merchandising elements.

UNIT IV Mannequins and Fixtures**8**

Mannequins – purpose and applications, types of mannequins, alternatives of mannequins and other human forms, Fixtures-Role of fixtures, types of fixtures, criteria for selection of fixtures, dressing fixtures, modular fixtures. Sourcing of Properties-buy, rent or build.

PRACTICE: Development of miniature merchandise displays using mannequins and fixtures.

UNIT V Merchandise Planning and computer aids in visual merchandising**9**

Planogram-Definition, design and direction of flow. Floor plans and reading of floor plans, purpose of planning. Merchandise assortment planning – Price, Styles, Sizes and Colors, optimize apparel assortments, display calendar and planning a display, scheduling the promotion, budgeting and safety factors in visual merchandising.

Introduction-Softwares used for store design and merchandise arrangement planning, inventory management. Recent computer technologies used in visual merchandising

PRACTICE: Development of sample planogram and merchandise assortment planning for given store particulars.

TOTAL: 45 Hours**TEXT BOOKS**

1. Pegler M.M., “**Visual Merchandising and Display**”, IV Edition, Fair child Publications, NewYork, 2001.
2. Diamond. J. Diamond. E., “**Contemporary Visual Merchandising**”, Prentice Hall Inc. New Jersey 2003.
3. Diamond.E, “**Fashion Retailing - A Multi-channel Approach**”, II Edition, Prentice Hall Inc., New Jersey 2006.

REFERENCE

1. Rath P.M., Peterson J., Greensley. P, Gill. P, “**Introduction to Fashion Merchandising**”, Delmar Publishers Inc., New York 1994.
2. Phillips P.M., “**Fashion Sales Promotion**”, II Edition, Prentice Hall Inc, New Jersey, 1996.
3. Curtis E, “**Fashion Retail**”, John Wiley and Sons Ltd, England, 2004.

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Explain the importance of productivity and discuss the role of industrial engineer in the garment industry.
2. Discuss the various procedure and techniques involved in method study.
3. Explain the objectives and procedure to measure work content in the garment industry and also discuss its importance.
4. Explain the importance of plant layout, standardisation techniques and analyse the lean manufacturing technology in the garment industry.
5. Discuss the various planning, control tools and material handling systems used in garment industries.

CO/PO, PSO Mapping
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2	2	3	3	2				2	3	2
CO2	3	3	3	3	3	2	3	2			1	3	2	2
CO3	3	2	2	2	3	2	2	2				2	2	2
CO4	3	2	3	1	3	2	2				1	2	3	2
CO5	3	2	3	2	3	3	3					3	2	2

UNIT I Industrial Engineering Basics**9**

Productivity: Production, Productivity, types of productivity, productivity measures, factors affecting productivity in garment industry, measurement of line efficiency.

Industrial engineering: Definition, Need of Industrial Engineering, Benefits, Roles and responsibilities of industrial engineer in apparel industry

IE in Ergonomics and Safe working environment: right and wrong postures, Manufacturing environment in RMG sector: Light, Noise, Vibration, Colour, Temperature and Ventilation and its Standards

UNIT II Method Study**9**

Method study: Definition, Objectives, Basic procedure, Value Added and Non Value Added activity analysis, Method improvement techniques

Process Chart: Flow process chart, multiple activity chart, Case studies and application of process chart in garment industries.

Motion Economy: Principles of motion economy, classification of movements, micro-motion study, factors of ergonomics in motion study

UNIT III Work Measurement**9**

Work Measurement: Definition, Objective, Techniques

Time study: Operation Breakdown and its importance, definition of time study, steps in making time study, breaking the job into elements, stop-watch procedure, different pre-determined motion time study (PMTS) techniques, Work sampling Technique

Standard Time: Types of rating factor, Types of allowances: Personal, Fatigue, Machine, Delay and Policy allowances, mechanism of arriving SAM, SMV and SAM examples for regular garments. Latest work measurement techniques – RFID and IoT.

UNIT IV Plant Layout

9

Layout: Objectives, Steps in planning layout, Types of layout, importance of Plant location, Work area planning, quick changeover, application of robotics in automated sewing production systems.

Standardisation: Standard operating procedure, Risk analysis during proto-type development, ROI on standardisation techniques.

Lean Manufacturing: Definition, objective, concepts and principles, SMED technique.

UNIT V Planning and Control

9

Planning: Cost per minute, learning curve, preparation of operation bulletin, development of skill matrix, thread consumption, estimation of on-standard and off-standard time.

Line Balancing: WIP, factors influence on line balancing techniques, pitch diagram analysis.

Material Handling: Definition, objective, classification of material handling equipment in apparel industries.

TOTAL: 45 hours

TEXTBOOKS

1. Jana, P., & Tiwari, M. (2018). **“Industrial Engineering in Apparel Manufacturing”**. New Delhi, India: Apparel Resources Pvt. Ltd. (ISBN: 9788193247204)
2. Khan M.I **“Industrial Engineering”**, New Age International, 2007.

REFERENCE

1. Cooklin Gerry, **“Introduction to Clothing Manufacture”**, Blackwell Science Ltd., 2006.
2. Johnson Maurice **“Introduction of Work Study”**, International labour Organization, Geneva, 2010.
3. Ralph M Barnes, **“Motion and Time study design and measurement of work”**, John Willey sons Inc. 2002., New York
4. Bridger, **“Introduction to Ergonomics”**, Tata McGraw Hill, 1995

COURSE OUTCOMES

At the end of the study of this course, the students will be able to,

1. Develop pattern, prepare draping model for the given measurement.
2. Drape and sew the finished pattern, 3D Simulation of garment with fabric design, fabric texture, seams trims, other surface ornamentation.
3. Check the virtual fitting with required pattern alterations.

CO/PO, PSO Mapping														
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	2	3							3	3	3
CO2	3	3	3	3	3							3	3	3
CO3	3	3	3	3	3							3	3	3

LIST OF EXPERIMENTS

- I. Practice of 3D fit analysis software features. (2 sessions)

- II. Develop pattern, prepare 3D draping model for the given measurement and development of 3D garment by virtual stitching. 3D Simulation of garment with fabric design, fabric texture, seams, trims, and other surface ornamentation. Analysis of virtual fitting with required pattern alterations for the following styles:
 1. Baby's frock
 2. Men's T-shirt
 3. Men's trouser
 4. Women's tops and skirt
 5. Women's long frock

TOTAL: 30 hours

3D VIRTUAL FIT ANALYSIS LABORATORY

List of equipment required for a batch of 30- students

S. No.	Name of the equipment / software	Quantity Required
1.	Computers-Pentium IV	30
2.	Scanner	1
3.	Printer	1
4.	Pattern Drafting, Grading and Marker Planning Software – Lectra Software	30 user licenses
5.	3D fit Software – Lectra Software	30 user licenses
Total		92

COURSE OUTCOMES

At the end of study of this course the students will be able to,

1. Practice the work measurement technique for cutting, sewing and packing operation.
2. Estimation of SAM of the garments through PMTS software.
3. Develop the sewing line layout for the garment production in the apparel industry.

CO/PO, PSO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO12	PSO 1	PSO2	PSO3
CO1	3	3	3	2	3	3	2	2			2	3	3	2
CO2	3	2	2	2	2	3	2					3	2	2
CO3	3	3	3	2	3	2	3	2			2	3	3	2

LIST OF EXPERIMENTS

1. Analysis of a cutting operation elements and determine the VA-NVA elements, SAM, suggestions for method improvement and capacity study through time study technique. (1 session)
2. Analysis of a sewing operation elements and determine the VA-NVA elements, SAM, suggestions for method improvement and capacity study through time study technique. (1 session)
3. Analysis of inspection and packing operation elements and determine the VA-NVA elements, SAM, suggestions for method improvement and capacity study through time study technique. (1 session)
4. Engineering operation sequence for a basic T shirt and calculation of standard allowed minute (SAM) value using predetermined time standards. (1 session)
5. Engineering operation sequence for a men’s wear and calculation of standard allowed minute (SAM) value using predetermined time standards. (1 session)
6. Engineering operation sequence for a women’s wear and calculation of standard allowed minute (SAM) value using predetermined time standards. (1 session)
7. Engineering operation sequence for a kid’s wear and calculation of standard allowed minute (SAM) value using predetermined time standards (1 session)
8. Preparation of operation bulletin, line balancing, cost per minute and the development of sewing line layout for the given garment. (1 session)
9. Determination of sewing threads consumption for the given garment. (1 session)
10. Identify suitable folders and attachments for the production of given garment samples. Analyse the given operation and design a new folder/attachment.

TOTAL: 30 hours

List of equipment required for a batch of 30 students

S. No.	Name of the equipment / software	Quantity Required
1.	Computer (Pentium i5)	30
2.	Stop watch	15
Total		45

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Identify case study and innovative ideas related to the subjects learnt in the current semester.
2. Execute a mini project related to the case study and innovative ideas identified by the students.
3. Function effectively on teams and to communicate effectively and develop report with results and conclusion of the mini project work.

CO/PO, PSO Mapping														
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	2	3	3	3	3	3	3	3

The students should complete the following tasks:

- Identify and finalise the mini project members.
- Identify a guide for their mini project and select an area to solve a research or industry problems.
- Developing a scope for their mini project that will include objectives, budget, timeline and any other variables.
- Survey of literature
Once the plan is ready for the mini project, the next step is to refer journals, past work related to their mini projects and other sources to compile information about the work already done in the specified area.
- Preparing work plan for the mini project.
- Execution of mini project as per the work plan.
- Report Preparation for the work executed by them.

REVIEWS TO MONITOR THEIR WORK PROGRESS

- An appointed committee of faculty will review the progress of the mini project three times in the semester at periodic interval before final viva.
- The final viva will be conducted by the appointed committee of an external and an internal faculty.

Total: 30 hours

COURSE OUTCOMES

At the end of the study of this course, the students will be able to,

1. Define and discuss the fashion forecasting, types of forecasting and compilation of forecasting information.
2. Explain the forecasting packages, role of forecasters in aiding designers and the various processes involved in it.
3. Explain the forecasting procedure, the role and method of forecasting.
4. Explain the Colour Forecasting process and the tool kits used to predict the direction
5. Explain the colour cycles and colour relationship in the forecasting process

CO/PO, PSO Mapping														
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	2		2	2	2		3	2	3
CO2	2	3	3	3	3	2	2	2	2	3	1	3	3	3
CO3	2	3	3	2	3	2	2		2	3	2	3	3	3
CO4	2	3	3	3	2	2				3	2	3	3	3
CO5	2	2	2	1	1					2	2	2	2	2

UNIT I Fashion Forecasting**9**

Fashion Forecasting: Definition of forecasting, types of forecasting, source of Fashion forecasting information, forecasting agencies and their role in forecasting. Seasons and their impact on fashion. Compiling fashion forecasting information, forecasting agencies, forecasting magazines, websites and information in the forecasting publications.

UNITII Role of Forecasting Agencies**9**

Role of Forecasting Agencies: Fashion forecasting packages and magazines. Specialist fashion forecasting companies: WGSN, promostyl. Role of forecaster in aiding fashion designers, developers and retailers, process of forecasting, decision making process, when to start forecasting for the selling season.

UNIT III Colour, Style and Fabric Forecasting**9**

Colour, Style and Fabric Forecasting: driving forces of fashion, The views of the forecasters and trend information users, knowledge of colour, style and fabric, forecasting process, forecaster's toolkit, development of story Predicting the direction for colour, style and fabric forecast, Market study-review of market performance, Fashion Triangle of Balance.

UNIT IV Forecasting Procedure**9**

Forecasting Procedure: Endogenous and Exogenous variables in forecasting, Source of forecasting data, collection of data, categorising under different theme for different styles, fabric, colour and accessories for different seasons. Method of adopting forecasted data in domestic, International and Regional markets. Method of forecasting for industries.

UNIT V Trend Analysis on accessories**9**

development of story predicting the direction for accessories forecast, design jewelry, bags, belts, scarves, hats, footwear, eyewear based on forecasted trend analysis

TEXT BOOKS

1. Kathryn McKelvey and Janine Munslow, “**Fashion Forecasting**”, Wiley , Blackwell, USA, 2008
2. Seivewright Simon, “**Basics Fashion Design -Research and Design**”, Bloomsbury Publication India, 2012.

REFERENCE

1. Susan Dillon, “**The Fundamentals of Fashion Management**”, AVA Publishing (UK) LTd., 2012.
2. Lorynn Divita, **Fashion Forecasting**, Fairchild, 2019.
3. Chelsea Rousso and Nancy Kaplan Ostroff, **Fashion Forward**, Fairchild, 2018
4. Evelyn L. Brannon & Lorynn R. Divita, **Fashion forecasting**, Fairchild books, 2015
5. Eundeok kim & Ann marie fiore, **Fashion Trends: Analysis and Forecasting**, Berg publications, 2011
6. Tracy Diane and Tom Cassidy, **Color forecasting**, John wiley and sons, 2009
7. Chelsea Rousso, “**Fashion Forward - A Guide to Fashion Forecasting**”, Bloomsbury Academic, 2012.

COURSE OUTCOMES

At the end of the study of the course the students will be able to,

1. Discuss the need, types of sensors and sector overview of wearable devices.
2. Explain the various types of electronic components used in wearable garments.
3. Explain the procedure for developing conductive fibre, yarn and fabric used for wearable electronics.
4. Discuss the various types of smart wearable medical wellness garments
5. Discuss the various applications of smart wearable electronic garments.

CO/PO, PSO Mapping														
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3				2		2	3	3
CO2	2	2	3	3	3		1					3	3	3
CO3	3	3	3	3	3	2	2					3	3	3
CO4	3	3	3	3	3	3	2					3	3	3
CO5	3	3	3	2	2	3						2	2	3

UNIT I Basics of Wearable Devices 8

Introduction to Wearable Devices, The need and emergence of wearable computing, IoT and wearable electronics, Types of wearable sensors: Invasive, Non-invasive; Intelligent clothing and sectors' overview – sports, healthcare, Fashion and entertainment, military, environment monitoring, mining industry, public sector and safety.

UNIT II Electronic Components and Materials 8

Electronics components - resistor, capacitor, inductors and their principles. Functions of microprocessors and microcontrollers, Sensors: capacitive pressure sensor, resistive pressure sensor, optical textile sensor, temperature sensor and humidity sensor. Basics of silver plated copper wire, conductive thread, slide on/off switches, Li-ion battery, electro-mechanical actuators, fibre optics, and electroluminescent materials.

UNIT III Conductive Fibre, Yarns and Fabric 9

Introduction, definition and characteristics of conductive fibres. Development of conductive cotton wrapped nichrome yarn and fabric, Development of conductive copper core yarn and fabric, development of optical core conductive yarn and fabric. Basic of carbon nano tuber yarns (CNT). Fabric electrodes by knitting technology, bioelectrical signals through fabrics.

UNIT IV Smart Wearable Medical Wellness Garments 10

Development of Medical health monitoring life shirt vest, smart socks for infants, Wearable sensors for Athletes: respiratory, ECG, EMG & motion sensing. Wearable wellness system. E-textiles for soldier monitoring system: monitoring parameters, camouflaging and thermal regulation.

UNIT V Smart Wearable Electronic Garments

10

Method of Integration of electronic components in garments: Heating garment, Cooling garment, smart garment for remote monitoring, Women safety garment, smart shoes for sports, Mobility tracking garment, touch screen garment, research and future scope of wearable technology

TOTAL: 45 hours

TEXT BOOKS

1. Tilak dias, “**Electronics Textiles – Smart fabrics and Wearable technology**”, 1st edition, Wood head Publishing, 2015.
2. L.Ashok kumar & C.Vigneswaran , “**Electronics in textiles and Clothing – Designs, Products and Applications**”, CRC Press, Coimbatore, 2015

REFERENCE

1. Edward Sazonov and Michael R, “**Wearable Sensors -Fundamentals, Implementation and Applications**” II edition, Academic Press, 2020.
2. Toshiyo Tamura and Wenxi Chen, “**Seamless Healthcare Monitoring**”, Springer, 2018
3. Sarah kettle, “**Designing with Smart textiles**”, 1st Edition, Fairchild books, 2016
4. Xiaoming Tao, “**Wearable Electronics and Photonics**”, CRC Press, 2005
5. Tao, Xiaming, “**Handbook of smart textiles**”, 1st Edition, Springer Singapore, Singapore, 2015.

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Explain the fashion marketing process and marketing concepts in apparel business
2. Describe the marketing research, measurement and consumer behaviour in apparel industry.
3. Explain the buyer behaviour and factors affecting the buyer behaviour in apparel business
4. Describe the fashion marketing mix and explain the various promotional strategies in marketing
5. Explain the various stages involved in fashion product life cycle and new product development

CO/PO, PSO Mapping														
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO12	PSO1	PSO2	PSO3
CO1		2	2	3		2				2	2	2	2	2
CO2	2	3	2	3	2	2				3		2	2	2
CO3	2	3		2	3		2					2	2	2
CO4	2	2		3	2	2	2					2	2	2
CO5	3	3	3	2	2	3	3					3	3	3

UNIT 1 Fundamentals of Fashion Marketing 9

Meaning & Definition, The Perspectives on Marketing, Selling Vs Marketing, Marketing Environment- Internal & External, prospects & Challenges of marketing in Global Environment. Marketing concepts, marketing management, strategic marketing process, competitive marketing strategy – market leader, challenger, follower and nicher.

CASE STUDY: Study on emergence of new markets for Selling and Buying

UNIT II Research and Measurement 9

Segmentation and target marketing. Market Research - purpose, procedure and applications. Market potential – estimation. Market demand – methods of forecasting demand. Factors affecting consumer buying behaviour. Buying Process. Analysis of Consumer & Industrial Markets, Building Competitive Advantage

CASE STUDY: Market research on innovative fashion product need, demand, buying, selling, challenges and opportunities (Recycled products)

UNIT III Buyer Behaviour and Competitor Analysis 8

Understanding Industrial and Individual Buyer Behaviour, Influencing Factors, Domestic Market influences in Buying, Online Buying Behaviour, Building Customer Satisfaction. Analysis of consumer & industrial markets, Challenges in consumer behaviour and buying patterns, building competitive advantage.

UNIT IV Fashion Marketing Mix and Promotions 10

Fashion Marketing mix, Market Segmentation, Targeting and Positioning. Product- hierarchy, line and branding decisions, Price - Pricing objectives, Pricing decisions and procedures, promotion – advertising: media selection, measuring effectiveness, sales promotion and distribution - marketing channel, functions, various marketing systems, Online Marketing Trends, Multi brands.

CASE STUDY: Analysis on online buying tendency-difference between online market places like myntra, ajio etc., and brands having their own online sites and selling through them

UNIT V Product-life Cycle & New Product Development

9

Life cycle of product – introduction, growth, maturity and decline, marketing strategy for various stages of life cycle. Importance towards sustainability and eco-friendly product buying. Emergence of recycle raw materials, Product Planning & Development, New Product Development, Stages of new product development, Product Distribution and distribution channel

CASE STUDY: Development of New Tech pack for innovative Men's and Women's wear

TOTAL: 45 Hours

TEXT BOOKS

1. Warren. J. Keegan and Mark.C.Green , “**Global Marketing**”, Pearson Prentice Hall, New Delhi, 2005.
2. Vijay Barotia, “**Marketing Management**”, **Mangal Deep Publication, New Delhi 2001**
3. Philip Kotler, Kevin Lane Keller, Abraham Koshy, and Mithileshwar Jha , “**Marketing Management A South Asian Perspective**”, Pearson Education, New Delhi, 2006.
4. Grace I. Kunz , Ruth E. Glock, “**Apparel Manufacturing: Sewn Product Analysis**”, 4th Edition. Prentice Hall, 2004.

REFERENCE

1. “**The Textile Industry: Winning strategies for the New Millennium**”, Volume II, Textile Institute., Manchester, 1999.
2. Evelyn C Moore, “**Math for Merchandising**”, Wiley Eastern Inc., New Delhi, 1999

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Elaborate the objective and concept of fashion retail store administration, various terminologies used in fashion retail stores
2. Explain the various functions, various steps involved in opening, running and closing a fashion retail store
3. State the importance of Staff and Space Management in fashion retail store
4. Explain about the retail mix, marketing mix and inventory control in fashion retail store
5. State the importance of MIS, Reporting Systems and Store audits in fashion retail store

CO/PO, PSO Mapping
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO12	PSO1	PSO2	PSO3
CO1	2	2	3	2	2	2	2	2	2	2	2	2	2	3
CO2	2	2	3	3	3	3	3	3	3	2	3	2	3	2
CO3	2	2	1	2	3	2	2	2	2	1	2	2	2	2
CO4	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CO5	2	2	2	2	2	2	2	1	2	2	2	2	2	2

UNIT I Fashion Retail Store Administration and Environment 9

Introduction and Objective-Fashion Retail, Organization structure of a fashion retail store. Store Administration: Introduction, Objectives, Responsibilities of Store Administrator, Role of Housekeeping Staff in a Store, Guidelines for Housekeeping, Checklist for Maintenance, Licence Renewal. Various terms used in Fashion Retail Store Operations - CKU, RFID, Footfall, Conversion, Average Ticket Value & their importance.

UNIT II Functions of Retail Store 9

Introduction, Objectives, Everyday Operations of a Retail Store. Opening and Closing a Store, Store opening process, Store closing process, Store Key Management, Checklist for Store Opening and Closing. Importance of security, Security Process in Different Situations, Pilferage and Shoplifting, Handling Legal Aspects, Handling Counterfeit Currencies, Handling Tag Beep.

UNIT III Staff and Space Management 9

Introduction, Objectives, Employees and Shift Timings, Employee Entry and Attendance Recording System, Scheduling Breaks, Entry Recording System for Outsiders, Grooming Standards for Store Employees, Store Disciplinary Policy for Employees, Morning Briefing for Sales. Contribution made by each sales staff. Importance of SPF, CPF for a fashion retail store. Calculations of these and their analysis

UNIT IV Retail Mix, Marketing Mix, Inventory Control 10

Retail mix and its importance, Marketing mix and its importance, Inventory Management in Retail: Introduction, Objectives, Inventory Management, Important terminologies in inventory management, Importance of inventory management in retail, Stock check, Negative inventory, Movement of inventory from warehouse to store, Un-loading of inventory, Product Repair System-Customer Interface, Vendor Interface, Returning Merchandise to Vendor,.

UNIT V MIS, Reporting Systems and Store audit

8

Introduction, Importance of MIS in Fashion Retail Store Operations. Types of reports required in managing a fashion retail store Concept of Store Audit, Importance of Store Audit, Parameters for Store Audit, Storefront appearance, In-store presentation, Customer service, Storage, Housekeeping

TOTAL: 45 Hours

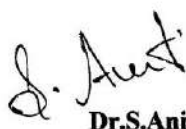
TEXT BOOKS

1. R Evans, Barry Berman Joel. "**Retailing Management-A Strategic Approach.**" (2009).
2. Newman, Andrew, and Peter Cullen. **Retailing: environment & operations.** Cengage Learning EMEA, 2002.
3. Diamond, Jay, Ellen Diamond, and Sheri Litt. **Fashion retailing: a multi-channel approach.** Bloomsbury Publishing USA, 2015.
4. Chetan Bajaj, RajnishTuli, Nidhi V Srivastava, "**Retail Management**", Oxford University Press, 2005.
5. Levy, Michael, Barton A. Weitz, and Dhruv Grewal. **Retailing management.** New York, NY: Irwin/McGraw-Hill, 1998.

REFERENCE

1. Quan, Vincent, Bang Nguyen, Meng-Shan Sharon Wu, Cheng-Hao Steve Chen, Francesca Bonetti, Patsy Perry, John Fernie, Ian Phau, and Min Teah. **Luxury fashion retail management.** Edited by Tsan-Ming Choi, and Bin Shen. Springer Singapore, 2017
2. Clodfelter, Richard. **Retail buying: From basics to fashion.** Bloomsbury Publishing USA, 2015.

Semester –VI	U19GE601-SOFT SKILLS AND APTITUDE – IV (Common to All except Civil)	L	T	P	C	Marks
		0	0	2	1	100
Course Outcomes						
At the end of the course the student will be able to:						
1. Demonstrate capabilities in job-oriented company selection processes using the hands-on approach						
2. Solve problems of any given level of complexity in all areas of quantitative aptitude and logical reasoning and score 70-75% marks in company-specific internal tests						
3. Demonstrate advanced-level verbal aptitude skills in English and score 70-75% marks in company-specific internal tests						
1. Soft Skills	Demonstrating Soft -Skills capabilities with reference to the following topics:					
	a. Mock group discussions					
	b. Mock interviews					
	c. Mock stress interviews					
2. Quantitative Aptitude and Logical Reasoning	Solving problems with reference to the following topics:					
	a. Functions and Polynomials					
	b. Clocks and Calendars					
	c. Data Sufficiency: Introductions, 3 Options Data Sufficiency, 4 Options Data Sufficiency and 5 Options Data Sufficiency.					
	d. Logical reasoning: Cubes, Non Verbal reasoning and Symbol based Reasoning.					
	e. Decision making table and Flowchart					
	Campus recruitment papers: Solving of previous year questions paper of all major recruiters					
	f. Miscellaneous: Cognitive gaming Puzzles-(Picture, Word and Number based), IQ Puzzles, Calculation Techniques and Time Management Strategies.					
	g. Trigonometry.- Concepts					
3. Verbal Aptitude	Demonstrating English language skills with reference to the following topics:					
	a. Writing captions for given pictures					
	b. Reading comprehension					
	c. Critical reasoning					
	d. Theme detection					
	e. Jumbled sentences					
	f. Writing a story on given pictures					
	g. Company specific verbal questions					



Dr.S.Anita

Head/Training

Department of Placement Training
Sree College of Technology

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Define and discuss the fashion and related terms and reason for change in fashion and the classification
2. Describe clothing and its purpose, Role of clothing and its status.
3. Describe the selection of clothing for various age groups, Fashion apparel and wardrobe planning.
4. Explain the elements and principles of the design, with the effects in the apparel
5. Bounce out the theme and development of portfolio.

CO/PO, PSO Mapping														
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO12	PSO1	PSO2	PSO3
CO1	3	3	3							3	3	3	3	3
CO2	3	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	3	3

UNIT I Introduction to Fashion**9**

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.

UNIT II Introduction to Clothing**9**

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

UNIT III Selection of clothes**9**

Clothes for children, middle-aged and adults. Types of clothes according to different types of human figure, Different materials for different clothes, Fabrics and colours suitable for different garments.

Planning for clothing needs: Formal clothing, Clothes for parties, Clothes for sports,

Casual Clothes for casualwear. Wardrobe Planning: Wardrobe for men and women

UNIT IV Elements and Principles of Design

9

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

UNIT 5 Design and Development

9

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.

TOTAL: 45 hours

TEXT BOOKS

1. Munslow, Janine, McKelvey, Kathryn “**Fashion Design Process Innovation and Practice**”, 2nd Edition , wiley , 2012.
2. Nicola White, Ian Griffiths, “[The Fashion Business Theory, Practice, Image](#)”, Berg, 2000.

REFERENCE

1. Sumathi, G. J. **Elements of fashion and apparel design**. New Age International, 2007.
2. Kathryn McKelvey “**Fashion Source Book**” Balckwell Publishing New Delhi.
3. Mills, Jane, and Janet K. Smith. **Design concepts**. Fairchild Books, 1985.
4. Rasband J. **Wardrobe strategies for women**. Fairchild Publications; 2002.
5. Jarnow JA, Judelle B, Guerreiro M. **Inside the fashion business**. Wiley; 1981.

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Explain the basics of garment technology.
2. Explain in detail about the various seams, stitches, needle type, sewing thread and types of sewing machines.
3. Explain in detail about the various garment accessories.
4. Explain the sewing quality parameters and method of garment laundering.
5. Discuss the quality standards of apparel industry and finishing of garments.

CO/PO, PSO Mapping														
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2						3	3	2
CO2	3	3	3	3	3	3	1					3	3	2
CO3	2	3	3	3	3	3	3					3	3	3
CO4	3	3	3	3	3	3	3	3				3	3	2
CO5	2	3	2	3	3		3	2				3	3	2

UNIT-I Basics of apparel industry - lay out, process sequence**9**

Introduction: Apparel industry in world, types of workers in apparel industry, typical layout of apparel industry.

Garment Production Sequence: Fabric selection, pattern making, grading, marker planning, spreading, cutting and sewing , finishing and packing.

UNIT II Seams, Stitches, Needle and Sewing Threads, Types of sewing Machines **9**

Seam and Stitches: Classification of seams and stitches, single needle lock stitch machine, parts and functions.

Needle and Sewing Thread: Needle, functions, special needles, needle size, numbering, needlepoint, sewing thread construction, material, thread size, sewing thread packages.

Basics of sewing machines: Single needle Lock stitch, Double needle lock stitch, Over lock, Flat lock, Feed of the arm, Button Attaching, Button hole machine.

Unit III Garment Accessories 9

Garment add-on: Labels, linings, interlinings, wadding, lace, braid, elastic, hook and loop fastening, shoulder pads, eyelets and laces, zip fasteners, buttons, Tapes, Tags.

UNIT IV Overview of garment making and care labelling of garment 9

Sewing Process: Garment basic components and assembly process.

Alternative sewing process: Fusing, welding, adhesive, seamless garments, moulding, robotics in sewing.

Basic sizes of mens wear, women's wear, childrens wear and its description.

Types of labels: Size label, brand label, wash care label, designer label.

UNIT V Defects in garment, pressing and Packing 9

Defects: Common defects in woven fabric, knitted fabric and garment.

Garment pressing: Pressing types and pressing equipments.

Packing: Types of packing and different types of packing materials.

TOTAL: 45 hours

TEXT BOOKS

1. Rajkishore Nayak Rajiv Padhye, “**Garment Manufacturing Technology**” 1st Edition, woodhead publication, 2015.
2. Ganesan, P., Gopalakrishnan, D., Karthik, T, “**Apparel manufacturing technology**”, CRC Publication, 2016.
3. Gerry Cooklin, Steven George Hayes, John McLoughlin, Dorothy Fairclough. “**Cooklin's Garment Technology for Fashion Designers**”, John Wiley & Sons, 2011.

REFERENCE

1. EIRI Consultants and Engineers, “**Hand book of garment manufacturing technology**”, 2017.
2. Janace E. Bubonia, “**Apparel production terms and processes**”, 2017.
3. Harold Carr, Barbara Latham, “**The Technology of Clothing Manufacture**”, Wiley, 1994.

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester VII under Regulations 2019
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Theory							
1	U19GE701	Professional Ethics and Human Values	3	0	0	3	45
2	U19FT701	Retail Management	3	0	0	3	45
3	U19FT921	Professional Elective - Fashion Photography	3	0	0	3	45
	U19FT924	Professional Elective - Luxury Brand Management					
4	U19FT926	Professional Elective - Fashion Styling	3	0	0	3	45
	U19FT927	Professional Elective - Entrepreneurship Development and Management of Apparel Industry					
5	U19CE1004	Open Elective - Disaster Management	3	0	0	3	45
	U19CS1001	Open Elective - Big Data Analytics					
	U19CS1003	Open Elective - Internet of Things					
	U19CS1004	Open Elective -Mobile Application Development					
	U19CS1006	Open Elective - Data Science					
	U19EC1001	Open Elective -Biomedical Instrumentation and Measurements					
	U19EC1002	Open Elective - Embedded and Real Time Systems					
	U19EC1003	Open Elective - Sensors and Smart Structures Technologies					
	U19EE1002	Open Elective -Energy Conservation and Management					
	U19EE1003	Open Elective - Innovation, IPR and Entrepreneurship Development					
	U19EE1004	Open Elective - Renewable Energy Systems					
	U19EE1005	Open Elective - Electrification in Building Construction					
U19MC1004	Open Elective - Fundamentals of Robotics						

Practical							
6	U19FT702	Fashion Portfolio and Product Development Laboratory	0	0	4	2	60
7	U19FT703	Accessory Design and Embellishment Laboratory	0	0	2	1	30
8	U19FT704	Draping Technique	0	0	2	1	30
9	U19FT705	Internship	0	0	4	2	4 weeks
10	U19FT706	Mini Project - IV	0	0	2	1	30
						Total Credits	22

Approved By

Chairperson, Fashion Technology BoS
Dr.D.Raja

Member Secretary, Academic Council
Dr.R.Shivakumar

Chairperson, Academic Council & Principal
Dr.S.R.R.Senthil Kumar

Copy to: -

HOD/Fashion Technology, Seventh Semester B.Tech FT Students and Staff, COE

COURSE OUTCOMES:

At the end of the course, the student will be able to

- Identify the core values that shape the ethical behavior of an engineer.
- Analyze and practice engineering ethics in their profession.
- Apply codes of ethics in the context of social experimentation.
- Explore various safety issues and ethical responsibilities of an engineer.
- Adopt ethical practices pertaining to global issues.

CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak												
COs	Programme Outcomes (POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	1	2	3	3	3	2	2	3
CO2	2	1	1	1	2	2	3	3	3	3	3	3
CO3	2	1	3	1	2	3	3	3	3	3	3	3
CO4	2	1	3	1	1	3	3	3	3	2	3	3
CO5	2	1	3	1	1	3	3	3	3	3	3	3

UNIT-I HUMAN VALUES

9

Morals, Values and Ethics – Integrity – Work Ethics – Service Learning – Civic Virtue – Respect for Others – Living Peacefully – Caring – Sharing – Honesty – Courage – Valuing Time – Co-operation – Commitment – Empathy – Self-Confidence – Character – Introduction to Yoga and meditation for professional excellence and stress management.

UNIT -II ENGINEERING ETHICS

9

Senses of Engineering Ethics – Variety of moral issues – Types of inquiry – Moral Dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan's theory – Consensus and Controversy – Profession and Professionalism – Professional Ideals and Virtues –Theories of Right action- Self Interest- Customs and Religion-Uses of Ethical Theories.

UNIT-III ENGINEERING AS SOCIAL EXPERIMENTATION

9

Engineering as Experimentation – Contrasts with standard experiments- Engineers as Responsible Experimenters – Importance and limitations of Codes of Ethics - Industrial Standards - A Balanced Outlook on Law – Industrial Standards- Case Study: Space shuttle challenger disaster.

UNIT-IV SAFETY, RESPONSIBILITIES AND RIGHTS

9

Safety and Risk – Types of risk - Assessment of Safety and Risk – Risk Benefit analysis-Reducing Risk – Case Studies - Chernobyl and Bhopal plant disaster.

Collegiality and Loyalty –Respect for Authority- Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Importance and consequences of whistle blowing - Professional Rights – Employee Rights – Intellectual Property Rights (IPR) and its components– Discrimination.

UNIT-V GLOBAL ISSUES

9

Multinational Corporations – Environmental Ethics – Computer Ethics and Internet- Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership – Participation in professional societies- –Code of Conduct – Corporate Social Responsibility.

Lecture: 45, Tutorial: 0, TOTAL: 45 Hours

TEXT BOOKS

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw Hill, Indian Edition, Tenth reprint, 2017.
2. Professional Ethics and Human values- Sonaversity, Edition 2018.

REFERENCES

1. Charles D Fleddermann, "Engineering Ethics", Prentice Hall, New Mexico, 2012.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2016.
3. Charles E Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics – Concepts and Cases", Cengage Learning, 2009.
4. R.Subramanian, "Professional Ethics ",Oxford University Press , Second Edition, 2017.

Nirav Kumar
5/7/2022

Member Secretary-Academic Cell
SONA COLLEGE OF TECHNOLOGY
SALEM - 636 005.

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Explain the concept of retailing as a channel of communication and the elements of retail formats, elucidate the types of ownership structures in retailing
2. Explain the concept of buying and the factors affecting the buying behavior of the customers, explain the concept and their significance of retail location strategy
3. Analyse the importance and the factors deciding retail pricing, explain the need, objectives, elements and promotional strategies in retailing
4. Analyse the importance of store atmospherics and visual merchandising and discuss the various store's atmospherics both interior and exterior, types of store layout designs and visual merchandising concepts
5. Apply the various methods and techniques involved in merchandise management and e-tailing

CO/PO, PSO Mapping															
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak															
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		1	2	2	2	3		2	3	3	2	2	2	2	2
CO2		3	1	3	2	3		2		3	2	2	2	2	2
CO3	1	3	2	3	2	3		3	3	3	2	2	2	2	2
CO4		2	2	3	3			2	2	3	2	2	2	2	2
CO5		3	2	2	2			2	2	3	2	2	2	2	2

UNIT I Basic Concepts of Retailing**9**

Introduction: Concept and importance of retailing, characteristics of retailing, functions and activities of retailing.

Types of Retailers: Structure and nature of retail channels, trends in retail formats, relationship between retailers and suppliers. Dealers and Subdealers.

Multichannel Retailing and Ownership Structures in Retail: Multi-channel retailing, classification of retail units on the basis of ownership, operational structures and retail location

UNIT II Consumer Buying Behavior and Retail Location Strategy**9**

Retail Consumer Behavior: Features and need for studying consumer behaviour, basic model of consumer decision making, factors affecting consumer decision making, stages and types of the consumer decision-making.

Retail Location Strategy: important factors in location decision, types of retail locations, site selection analysis, retail location theories and assessment procedures.

UNIT III Retail Pricing and Promotion Strategy**9**

Retail Pricing: Objectives, approaches and strategies adopted in pricing of products, external factors influences on retail pricing strategy and methods for setting retail prices. Factors affecting retail pricing. Retail analytics and its scopes.

Promotion Strategy: Sales promotion, objectives of sales promotion, steps in designing retail sales promotion, advertising, objectives and types of advertising and steps involved in retail advertising.

UNIT IV Store Atmospherics and Visual Merchandising

9

Store Atmospherics: Importance of atmospherics, role of atmospherics in retail strategy, effects of retail unit environment and components of retail atmospherics. Exterior atmospherics: Store entrance, display windows, marquee, facade, parking facilities. Interior atmospherics: Lighting, music, Store layout, layout planning, grid, freeform, race track and storeyed.

Visual Merchandising: Organising the display, planogram, components of display, category planning, wall displays, floor fixtures, display products, promotional items, lighting fixtures, signage and factors to consider in organizing an effective display.

UNIT V Merchandise Management and E-tailing

9

Merchandise Management: Components of merchandise management - Merchandise planning – Planning of assortment - Inventory tum over. Sales forecasting - Collaborative planning forecasting replenishment (CPFR). Merchandise mix, Merchandise budget plan for fashion merchandise - monthly sales, beginning of month (BOM), end of month (EOM), open to buy (OTB). Allocating merchandise to stores.

E-tailing: Store and non-store retailing, concept of virtual retail store, category planning, role of internet and mobiles in virtual retailing, customer benefits and modes of payment and emerging retail technologies. Eye focusing in virtual retailing.

TOTAL: 45 hours

TEXT BOOKS:

1. Chetan Bajaj, RajnishTuli, Nidhi V Srivastava, “**Retail Management**”, Oxford University Press, 2016.
2. K.V.S. Madaan, “**Fundamentals of Retailing**”, Tata McGraw-Hill, New Delhi, 2009.

REFERENCE:

1. Jarnow.J.AGuerreiro and Judello B, “**Inside the Fashion Business**”, Pearson Education, New Delhi, 2004.
2. Marian L. Davis, “**Visual Design in Dress**”, Prentice Hall Inc., Third Edition, 1996.
3. Berman and Evans (2002), “**Retail Management: A Strategic Approach**”, 8th edition, Pearson Education, New Delhi.

PROFESSIONAL ELECTIVE

U19FT921

FASHION PHOTOGRAPHY

3 0 0 3

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Explain the fashion photography concepts and its significance.
2. Understand the equipment handling concepts followed in achieving quality images.
3. Differentiate the lighting techniques used to capture images in varied perspectives.
4. Compare and contrast the methods of photography techniques followed in shooting images.
5. Summarize knowledge on the editing parameters to produce a conceptual presentation of images.

COs	CO/PO, PSO Mapping														
	(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		3	2	2	2	3		2	3	3	2	2	2	2	2
CO2		3	1	3	2	3		3	3	3	2	2	2	2	2
CO3	3	3	2	3	3	3		3	3	3	2	2	2	2	2
CO4		2	2	3	3			3	2	3	2	2	2	2	2
CO5		3	2	2	3			3	2	3	2	2	2	2	2

UNIT I Introduction to Photography

12

Photography: Areas of photography, benefits and its applications in fashion industry. History of fashion: The origins of fashion, The role of photography in shaping fashion trends Major historical movements in fashion photography, Society photographs of aristocrats, actresses and society models wearing their clothes 1910, Fashion arrives in advertisement 1930s, Dynamic location Photography 1940's, Types of fashion photography, scope and opportunities, Types of cameras – TLR, SLR, DSLR, Polaroid, under water and digital camera. Working principle of camera. Lens specifications and types of films. Care instruction and maintenance for camera.

UNIT-II Tools and Dark room Techniques

7

Camera techniques: Aperture, shutter speed, ISO, Focal no and focal length. Equipment techniques: Exposure, measurement of light, tripod, monopod, filters and its types, Lens hood, rings and its types. Lighting techniques: Night photography, indoor and outdoor shoots equipments. Story board for a genre: Photographs describing the story (Indoor /outdoor).

UNIT-III Lighting types and its Effects

9

Lighting: Introduction, importance and its types. Composition through pose, propping, and scene elements: Makeup, hair, pose and expression. Creative and glamour lighting, Studio lights, Outdoor lights Controlling lights, Flash lights and Revealing lights effects and shooting techniques, Exploring the light, angle light, shadow and angle of view. Film types: Black, white and colour. Film formats and its specifications.

UNIT-IV Aesthetics of Photography

9

Fashion photography sources in different media: styling, modelling, news papers, magazine, catalogues, fine arts, websites and look book, bespoke showcases, Make up and looks, Understanding human body and fashion figures, body shape perception of beauty and silhouette, Design aesthetics, clothing and accessories, choosing of backgrounds, Posing ordinary and bizarre, colour corrections for proper skin tone , colour corrections for accurate garment or object reproduction Retouch methods for skin, eyes, and clothing and advanced retouching techniques.

UNIT - V Editing and printing methods

8

Introduction about developing and printing: Post processing significance, blend transitions, colour balancing, shaping of lighting and darkening, Layer changing. Labelling of images, descriptive writing, and content enhancement. Computer applications in photography – Picture editing software's and printing techniques.

Activity:

Students need to do photo shoot and prepare an album.

Total: 45 hours

TEXT BOOKS:

1. The incomplete highsnobiety guide to street fashion and culture, 2018, Gestalten.
2. Henry Carroll, Read this if you want to take great photographs, 2014.
3. Tom Ang, Photography the definitive visual history. 2014.
4. Nirmal Pasricha, "A Professional's Basic Photography", Black Rose Publications, Delhi, 2002.
5. Simon Joinson, "Get the most from your Digital Camera", A David and Charles Book., United Kingdom, 2004.
6. Peter Cattrell, "Photography", Octopus Publishing Group Ltd, London 2005.

REFERENCE:

1. Bruce smith, Fashion Photography: A Complete Guide to the Tools and Techniques of the Trade. 2008.
2. <https://www.nytimes.com/1981/11/29/arts/camera-darkroom-techniques-for-more-interesting-prints.html>, Steve Mccurry, The iconic photographs, 2012, Phaidon publishers.

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Describe the significance of branding, types of luxury brands and strategic planning for the luxury branding.
2. Explain the luxury brand concepts, brand identity and implementation of luxury brand concepts.
3. Analyse the significance of luxury brand retailing, steps in luxury brand promotion and emerging retail technologies for increase sales.
4. Analyse the opportunities for global brands, fast fashion branding and luxury branding and global brand leadership.
5. Evaluate the strategies for choosing a luxury brand name, luxury brand sketching, brand challenges and reinforcing brands.

CO/PO, PSO Mapping															
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak															
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	2	2	2		3	3	3	2	3	2	3	2
CO2	3	2	2	3	3	2					2	2	2	3	2
CO3	2	2	2	2	3	2		2	3	3	2	3	2	3	3
CO4	2	3	3		3	3	3			3	2	3	2	3	3
CO5	2	3	2			3	3	1		3	2	3	2	2	2

UNIT I Overview of Luxury Brand Management**9**

Concept and Significance of branding – Comparison between a Product, brands and Luxury brands – types of luxury brands, Indian luxury brands–Designing luxury brand - Creating a luxury brand – Branding challenges – Measure brand personality – Brand image - Strategic planning for the luxury branding – case study.

UNIT II Luxury Brand Concepts**9**

Significance key concepts in luxury brand management - Luxury Brand identity – Luxury brand content and heritage – Difference concepts between luxury and time, money, art, religion, and fashion - Sociology of fashion and luxury brands - democratization of luxury brands –Implementation of luxury brand concepts.

UNIT III Retail Management**9**

Concept and significance of luxury brand retailing - approaches and strategies adopted in pricing of luxury products – Steps in luxury brand promotion – Merchandising and marketing luxury brands - scope and trends in retail through- E-commerce - Emerging retail technologies for increase sales

UNIT IV Global Brands and Latest Trends**9**

Global luxury Brands, Opportunities for global luxury brand, consumers and luxury brands, barriers to global brands, global brand leadership. Case studies on managing global brands. Fast fashion product branding and luxury product branding - Scope, Customer behaviour, Case studies on fast fashion and luxury branding.

UNIT V Sustainability in Luxury Brand Management

9

Defining branding strategy -Strategies for choosing a luxury brand name -Line extension Category Extension – Luxury Brand Sketching - Launching a luxury brand extension - Managing brand architecture - Brand roles in the brand portfolio -Brand relationship spectrum -Managing Brands over time - Brand challenges - Reinforcing brands - Brand turnaround -Case Study

TOTAL: 45 hours

TEXT BOOKS:

1. MahimSagar, Deepali Singh, Agrawal D P, “**Brand Management**”, Ane Books Pvt, Ltd., 2nd edition, 2012.
2. Chevalier, Michel, and Gerald Mazzalovo , “**Luxury Brand Management: A World of Privilege**” , John Wiley & Sons, 2012.

REFERENCE:

1. Kapferer, Jean-Noël, Joachim Kernstock, Tim Oliver Brexendorf, and Shaun M. Powell, eds, “**Advances in luxury brand management**”, Springer, 2017.
2. Keller, Kevin Lane, M. G. Parameswaran, and Isaac Jacob, “**Strategic brand management: Building, measuring, and managing brand equity**”, Pearson Education India, 2011.
3. Tungate, Mark, “**Fashion brands: branding style from Armani to Zara**”,Kogan Page Publishers, 2008.
4. Moorthi, Y. L. R, “**Brand Management**”,Vikas Publishing House, 2009.
5. Riezebos, Rik, and Jaap Van Der Grinten, “**Positioning the brand: an inside-out approach**”, Routledge, 2012.
6. Vedamani GG, “**Retail management**”, Jaico, Ed. 3rd. 2008.

COURSE OUTCOMES

At the end of study of the course the students should be able to,

1. Explain about fashion styling, factors involved and sources of styling.
2. Describe the importance of personal styling and its requirements.
3. Compare the role of editorial and catalogue styling and its process for product promotion.
4. Elaborate the show styling, its necessities, requirements and its process for company promotion.
5. Differentiate commercial styling, theatre styling and brand promotion, process in creating new brand identities.

COs	CO/PO, PSO Mapping														
	(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	2	2		3				2	3	3	2	2
CO2	2	3	3	3	1	3				2	2	2	3	3	2
CO3	2	3	3	3	3	3	3				2	2	3	3	3
CO4	2	3	3	3	3	3	3			2	2	3	3	3	3
CO5	3	3	3	3	3	3	3				2	2	3	3	3

UNIT-I Fashion Styling**9**

Introduction to styling, fashion system and fashion marketing, , principles of art, design and trend forecasting for creative fashion styling, various sources of fashion styling, expectations of international luxury, fashion and publishing industries, photography and fashion magazine in styling, opportunities for stylist, studies on body challenges.

UNIT -II Personal Styling**9**

Introduction and its importance, body shape and personality, garment style vocabularies, Elements of makeover, wardrobe edit, styling for personal, celebrities, stage performance and special occasions, types of makeover, hair styles and accessories, photo shoot for different occasions, types of garments that need to be avoided.

UNIT -III Editorial and Catalogue styling**9**

Introduction, essentials of editorial and catalogues, Role of designer, freelance stylists, photographers and models, choice of theme, colour, dress and make up for styling, role of visual communication and graphic design in the fashion styling, process of producing photo shoots from initial idea stage to final image editing, Digital and online media – fashion websites, blogs, social media.

UNIT - IV Show styling**9**

Introduction, Necessities of events and fashion parades, types of shows, choice of models, garments, accessories, music, lighting and location, developing the event concept, Role of media, photographers, and promotional companies in show styling.

UNIT -V Commercial styling

9

Introduction, Choice of styling models or celebrities for commercials advertisement, selecting the wardrobe items, choice of location, models, makeup artists and photographer for the shoot, process involved in creating new brand identities, new markets and consumers. Brand photograph, Character styling, Sourcing and overview of theater styling.

TOTAL: 45 Hours

TEXT BOOKS:

1. Griffiths, D. (2012). **Fashion Stylist's Handbook**. Hachette UK.
2. Dingemans, J. (1999). **Mastering fashion styling**. Macmillan International Higher Education.

REFERENCE:

1. Devlin, P. Vogue **Book of fashion photography** (London: Thames and Hudson,1979)
2. Simon, M. **Fashion in art. The Second Empire and Impressionism** (London:Zwemmer, 1995)
3. Williams, V. (ed) Look at me. **Fashion and photography** in Britain 1960 to thepresent (London: British Council, 1998)

COURSE OUTCOMES

At the end of the study of the course the students will be able to,

1. Explain the role, characteristics of entrepreneur and entrepreneurship management.
2. Discuss the various inputs required to setting up a new SSI.
3. Analyse the procedure for developing a new business plan.
4. Evaluate the procedure to manage a garment industry.
5. Analysis the importance of market analysis and advertisement.

COs	CO/PO, PSO Mapping														
	(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	3	3	3	3	3	2	3	3	2	3
CO2	3	3	2	3	2	3	3	3	3	3	2	3	3	2	3
CO3	3	3	2	3	3	3	3	3	3	3	2	3	3	2	3
CO4	3	3	2	3	3	3	3	3	3	3	2	3	3	2	3
CO5	3	2	2	2	3	3	3	3	3	3	2	3	3	3	3

UNIT I Entrepreneurship**9**

Definition of an entrepreneur, compare entrepreneurship with management, characteristics of an entrepreneur, role of an entrepreneur, opportunities for entrepreneur and women entrepreneur.

UNIT II Establishing a New Venture**9**

Small Scale Industry: Definition, importance of small scale industry, government concessions and encouragement to SSI, procedure for registering SSI, advantages of SSI.

Setting up New SSI: Input requirement for setting up SSI, amount of investment, study of land, capital, labour, raw material, market demand, technical analysis, financial analysis; preparing a project for setting up garment industry, products identification in various fields, causes of industrial disputes, mechanisms for settlement of disputes, idea of risk management. Swot analysis of SSI.

Establishing a Startup: Firm registration- DIPP registration- benefits for startup by Govt of India

UNIT III Business Plan Development**9**

Developing Business Plan: Need for a business plan, structure of a business plan, critical elements of an effective business plan, preparing a business plan report, forecasting developments and charting an action plan, identifying the product/service evaluating the business venture, market research. Role of DIC

Financial Assistance: Bank assistance by state and central govt, functions of commercial banks, TIIC, SIDBI, NSIC, MUDRA.

UNIT IV Enterprise Management**9**

Enterprise Management: Requirements for growth of a venture, effective organizational structures, operational challenges for entrepreneurs, alternative operations / strategies for adapting an organization to changes in the market place, entrepreneurial and traditional corporate career paths, organizational structure relevant to small garment industry.

Managing 4Ms: Procedures involved in the management of men, machine, material and methods of production and operation.

UNIT V Market Analysis and Advertisement

9

Marketing: Importance of national and international marketing, advantages and disadvantages of national and international marketing, buyer, seller meet.

Market: Study of markets for raw materials and markets for finishing products, local markets, international markets, feasibility study.

Advertising: Different media used for advertising, trade fair displays, exhibitions, fashion shows.

Digital marketing: facebook, linkedin, youtube ads, promotion, SEO techniques, paid and free promotion campaigns

TOTAL: 45 hours

TEXTBOOKS:

1. Peggy A. Lambing, “**Entrepreneurship**”, Second Edition, Prentice Hall, 1999.
2. David Carson, Stanley Cromie and Pauric McGowan, “**Marketing and Entrepreneurship in SME's: An Innovative Approach**”, First Edition, Prentice Hall, New Jersey, 1996.
3. William L. Megginson, “**Small Business Management: An Entrepreneur's Guidebook**”, Fifth Edition, McGraw Hill, USA, 2005.

REFERENCE:

1. Philip Kotler, “**Marketing Management**”, Prentice Hall Inc., New Jersey, 1996.
2. **How to Set up Readymade Garment Export Industry, Part I and II**, Industrial Estate Manufacturers Association, 1992.
3. Sally Jones, “**Service Management and Operations**”, Prentice Hall, New Jersey, 1999.
4. Anantharaman V., “**Indian Industrial Relations: Law and Practice**”, UPM Press, Serdang, 1997.

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Select a theme for a season or festival and interpret the forecasting of colours, fabrics, textures, accessories relating to the theme selected.
2. Prepare design collection boards representing the mood, colour, and fabric swatches for the theme selected.
3. Illustrate fashion figures and visually communicate apparel design details in a flat sketch and illustrate and construct different styles of accessories and construct garments suitable to the theme.

COs	CO/PO, PSO Mapping														
	(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	3	3	3		2	3	2	3	2	2	3
CO2	3	3	3	1	3	3				3	2	2	3	3	3
CO3	2	2	2	2	3	3				2	2	1	3	3	1

LIST OF EXPERIMENTS

1. Selection of line, market segment, trend for a particular theme.
2. Analysis of target customer group and budget analysis
3. Forecast of colours, patterns and fabrics based on international forecast.
4. Preparation of story boards, mood boards, colour boards.
5. Collections of fabric swatches and colours based on collection.
6. Selection of surface ornamentation techniques
7. Selection of seams, necklines, collars, sleeves.
8. Preparation of various styles from selected fabrics.
9. Illustration fashion models both manually and using software.
10. Preparation of tech-pack for the developed style.
11. Construction of garment using required accessories and designs.
12. Selection of accessories.
13. Preparation of report, portfolio and costing sheet.

*Minimum of 2 garments is to be developed.

TOTAL: 60 hours

FASHIION PORTFOLIO AND PRODUCT DEVELOPMENT LABORATORY**List of equipment required for a batch of 30 students for U.G**

S. No.	Name of the equipment / software	Quantity Required
1.	Cork Top Tables	15
2.	Dress forms	
3.	Male : 40"chest full	1
4.	Male : 42"chest full	1
5.	Male : adjustable half	1
6.	Male : 40"chest half	1
7.	Female : 32.5" bust half	1
8.	Female : 32.5" bust full	1
9.	Female : 34.5" bust full	1
10.	Female : 36.5" bust full with hand	1
11.	Female : adjustable half	1
	Mannequins	
12.	i. Baby	
	Boy – 80.5 cm	1
	Girl – 88.8 cm	1
	ii. Teenage Girls & Boys	
	Boy – 139 cm	1
	Girl – 139cm	1
	iii. Adults	
	Male -186 cm	1
	Male -182.5 cm	1
	Female -157.6 cm	1
	Female -186 cm	1
	Jewellery bust half head	1
	Jewellery bust Indian face	1
	Jewellery hand	2
13.	Single-needle lock-stitch machine	30
14.	Steam Iron	3
15.	Fusing Machine	1
16.	Single Needle Lock Stitch Machine	
17.	Over lock machine	1
18.	Flat lock machine	1
19.	Button sewing machine	1
20.	Button Hole machine	1
21.	Feed - off the arm machine	1
22.	Bar tack sewing machine	1
	Total	106

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Develop and prepare embroidery design using computerised embroidery machine and attach button, buttonholes and eyelets using industry grade machinery and hand press machinery and demonstrate the basic embroidery stitches.
2. Embellish the fabric surface using various special embroidery stitches and different decorative surface embellishment and Illustrate and construct different styles of various fashion accessories using different materials.
3. Implement computerised embroidery and hand embroidery basic and decorative stitches and other surface embellishments on fabric along with fashion accessories and show the development procedure in different garment and apparel products.

COs	CO/PO, PSO Mapping														
	(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	3	3	3		2	3	2	3	2	2	3
CO2	3	3	3	3	3	3				3	2	2	3	3	3
CO3	2	2	2	2	3	3				2	2	3	3	3	1

LIST OF EXERCISES

1. Development of computerised designs for Machine embroidery (1 session)
2. Development of embroidery sample using computerised embroidery machine (1 session)
3. Attaching procedure of button, buttonholes, eyelets using industry grade machinery and hand press machinery (1 session)
4. Basic Embroidery stitches.(1 session)
 - Running, satin - long and short, chain, stem, herringbone, cross stitch, knotted stitch, fishbone, wheat, couching, buttonhole
5. Special embroidery stitches. (2 sessions)
 - Bead work, sequin work, zardosi, aari work, badla work
6. Decorative surface embellishment. (2 sessions)
 - Cutwork, drawn thread work, eyelet and mirror work, shadow work, ribbon work and Kundan work, Appliqué work and Patch work. (1 session)
7. Embellishment techniques Pompons, Fringes, Tassels. (1 session)
8. Designing and production of Earrings, bracelets, necklaces using materials like colored papers, fabric scraps, colour beads and stones. (2 sessions)
9. Designing and Construction of handbags and purses. (1 session)

TOTAL: 30 hours

ACCESSORY DESIGN AND EMBELLISHMENT LABORATORY

List of equipment required for a batch of 30 students

S. No.	Name of the equipment / software	Quantity Required
1.	Single needle lock stitch machine	30
2.	computerised embroidery machine	1
3.	Eyelet Hole Punch Machine	1
4.	Button sewing machine	1
5.	Button Hole machine	1

COURSE OUTCOMES

At the end of the study of the course, the student will be able to,

1. Explain about draping technique for industrial pattern, types of muslin fabrics, tools and human body measurements.
2. Apply the concept of dart manipulation and other techniques in draping of basic bodice blocks, basic skirts, sleeves and intimate apparels.
3. Develop the ready patterns from the draping styles for men's, women' and kids wear.

COs	CO/PO, PSO Mapping														
	(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	3	3	3		2	3	2	3	2	2	3
CO2	3	3	3	3	3	3				3	2	2	3	3	3
CO3	2	2	2	2	3	3				2	2	3	3	3	3

LIST OF EXPERIMENTS

1. Introduction to draping, tools and equipment, types of muslin fabrics for draping various garments. (1 session)
2. Collection of various types of fabrics and find the drape behaviour (1 session)
3. Draping of bodice front, back and sleeves. (1 session)
4. Draping of skirt front and back, Trousers front and back. (2 session)
5. Dart manipulation, contouring, ease and fullness details like collars and yokes etc., (2 session)
6. Draping of skirts with volume insertions and bias skirt dress. (2 session)
7. Draping of blouses and bustier. (2 session)
8. Draping of cowl, cascade, twisting and peplums effect in women's wear. (2 session)
9. Draping of kids wears. (1 session)
10. Draping of Men's formal shirt. (2 session)
11. Draping of intimate apparels using knitted fabric – Braziers' and Panties. (2 session)

DEMONSTRATION

1. Understanding the variation of dress form and human form, consideration of various measurements, adjusting the dress forms to human body measurements by padding and other techniques. (2 session)

Total: 30 Hours

DRAPING TECHNIQUE

List of equipment required for a batch of 30 students for U.G

S. No.	Name of the equipment / software	Quantity Required	Additional tools issued to individual students
1.	Cork Top Tables	15	L - scale
2.	Dress forms		Hip curve
3.	Male : 40" chest full	1	Meter Scale
4.	Male : 42" chest full	1	French Curve
5.	Male : adjustable half	1	Tracing wheel
6.	Male : 40" chest half	1	Measuring tape
7.	Female : 32.5" bust half	1	Tailor's Chalk
8.	Female : 32.5" bust full	1	Paper cutting scissors
9.	Female : 34.5" bust full	1	Fabric cutting scissors
10.	Female : 36.5" bust full with hand	1	1/4 th Paper Scale
11.	Female : adjustable half	1	
	Mannequins		
12.	i. Baby		
	Boy – 80.5 cm	1	
	Girl – 88.8 cm	1	
	ii. Teenage Girls & Boys		
	Boy – 139 cm	1	
	Girl – 139cm	1	
	iii. Adults		
	Male -186 cm	1	
	Male -182.5 cm	1	
	Female -157.6 cm	1	
	Female -186 cm	1	
	Jewellery bust half head	1	
	Jewellery bust Indian face	1	
	Jewellery hand	2	
13.	Single-needle lock-stitch machine	30	
14.	Steam Iron	3	
15.	Fusing Machine	1	
	Total	70	

COURSE OUTCOMES

At the end of the study of this training, the students will be able to

1. Get training in real world of production and process in the apparel and related industries.
2. Analyse the entire process in detail.
3. Identify the problems in the industry by observation and attempt to give solution and prepare an in-plant training report

COs	CO/PO, PSO Mapping														
	(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2	2		2	2		2	2	1	1	2	2	2
CO2	1	3	1	3		3	3		2	1	1	1	2	2	2
CO3	1	3	1	3		3	1		1	1	1	1	2	2	2

- The students have to undergo a **4 weeks** internship.
- 3 internal reviews shall be done by a committee duly appointed by the HOD.
- Students shall submit a report on the work done during the course duration which consists of the following:
 - Description of the work
 - Feedback from the respective industry mentor
 - Photographs of the students in the industry if the work is undertaken there.
 - Completion certificate from the Industry
- The final viva voce shall be conducted by a committee duly appointed by the office of COE which consists of a person from the related industry, two faculty members –
 1. From the same department
 2. From another related department.
- The evaluation is 100% internal.

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Identify case study and innovative ideas related to the subjects learnt in the current semester.
2. Execute a mini project related to the case study and innovative ideas identified by the students.
3. Function effectively on teams and to communicate effectively and Develop report with results and conclusion of the mini project work.

COs	CO/PO, PSO Mapping														
	(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3
CO3	3	3	3	3	3	3	2	3	3	3	3	2	3	3	3

The evaluation of mini project shall be conducted in the form of creative methodology as **Hackathon**.

Methodology:

- The students' group shall present their chosen problem statement and justify their selection.
- During review 2, they shall present their solution methodology to the chosen problem statement and also present the requirement.
- During review 3, the group shall present the progress made on the prototype development.
- The office of COE shall give 3 days to conduct the hackathon. During first two days, the students' group shall complete developing their prototype and showcase the same on the third day as video presentation/demonstration of the working model to the team of evaluators.

The evaluation is carried out in the following way:

- The team consist of industry personnel, faculty and peer students. Evaluation metrics and rubrics are provided to each of the evaluators. For computing the final marks, 50% weightage from industry evaluators, 40% weightage from faculty evaluators and 10% weightage from student evaluators, is considered. The numbers of industry evaluators and faculty evaluators for each programme will be decided by the HOD and COE as per the number of teams.
- Industry evaluators are appointed by the office of COE for which the list of such evaluators is provided by the respective departments. The faculty evaluators are also appointed by the office of COE as recommended by the respective HOD. The peer evaluators are chosen by the coordinators as one student from each team.
- Within 5 days after the completion of Hackathaon, the students shall submit the miniproject report as per the approved guidelines given by the Controller of Examinations.

Total: 30 hours

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Define and discuss the fashion and related terms and reason for change in fashion and the classification
2. Describe clothing and its purpose, Role of clothing and its status.
3. Describe the selection of clothing for various age groups, Fashion apparel and wardrobe planning.
4. Explain the elements and principles of the design, with the effects in the apparel
5. Bounce out the theme and development of portfolio.

CO/PO, PSO Mapping														
<i>(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak</i>														
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO12	PSO1	PSO2	PSO3
CO1	3	3	3							3	3	3	3	3
CO2	3	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	3	3

UNIT I Introduction to Fashion 9

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.

UNIT II Introduction to Clothing 9

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

UNIT III Selection of clothes 9

Clothes for children, middle-aged and adults. Types of clothes according to different types of human figure, Different materials for different clothes, Fabrics and colours suitable for different garments.

Planning for clothing needs: Formal clothing, Clothes for parties, Clothes for sports,

Casual Clothes for casualwear. Wardrobe Planning: Wardrobe for men and women

UNIT IV Elements and Principles of Design

9

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

UNIT 5 Design and Development

9

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.

TOTAL: 45 hours

TEXT BOOKS

1. Munslow, Janine, McKelvey, Kathryn “**Fashion Design Process Innovation and Practice**”, 2nd Edition , wiley , 2012.
2. Nicola White, Ian Griffiths, “[The Fashion Business Theory, Practice, Image](#)”, Berg, 2000.

REFERENCE

1. Sumathi, G. J. **Elements of fashion and apparel design**. New Age International, 2007.
2. Kathryn McKelvey “**Fashion Source Book**” Balckwell Publishing New Delhi.
3. Mills, Jane, and Janet K. Smith. **Design concepts**. Fairchild Books, 1985.
4. Rasband J. **Wardrobe strategies for women**. Fairchild Publications; 2002.
5. Jarnow JA, Judelle B, Guerreiro M. **Inside the fashion business**. Wiley; 1981.

COURSE OUTCOMES

At the end of the study of this course the students will be able to,

1. Explain the basics of garment technology.
2. Explain in detail about the various seams, stitches, needle type, sewing thread and types of sewing machines.
3. Explain in detail about the various garment accessories.
4. Explain the sewing quality parameters and method of garment laundering.
5. Discuss the quality standards of apparel industry and finishing of garments.

CO/PO, PSO Mapping														
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2						3	3	2
CO2	3	3	3	3	3	3	1					3	3	2
CO3	2	3	3	3	3	3	3					3	3	3
CO4	3	3	3	3	3	3	3	3				3	3	2
CO5	2	3	2	3	3		3	2				3	3	2

UNIT-I Basics of apparel industry - lay out, process sequence**9**

Introduction: Apparel industry in world, types of workers in apparel industry, typical layout of apparel industry.

Garment Production Sequence: Fabric selection, pattern making, grading, marker planning, spreading, cutting and sewing, finishing and packing.

UNIT II Seams, Stitches, Needle and Sewing Threads, Types of sewing Machines **9**

Seam and Stitches: Classification of seams and stitches, single needle lock stitch machine, parts and functions.

Needle and Sewing Thread: Needle, functions, special needles, needle size, numbering, needlepoint, sewing thread construction, material, thread size, sewing thread packages.

Basics of sewing machines: Single needle Lock stitch, Double needle lock stitch, Over lock, Flat lock, Feed of the arm, Button Attaching, Button hole machine.

Unit III Garment Accessories 9

Garment add-on: Labels, linings, interlinings, wadding, lace, braid, elastic, hook and loop fastening, shoulder pads, eyelets and laces, zip fasteners, buttons, Tapes, Tags.

UNIT IV Overview of garment making and care labelling of garment 9

Sewing Process: Garment basic components and assembly process.

Alternative sewing process: Fusing, welding, adhesive, seamless garments, moulding, robotics in sewing.

Basic sizes of mens wear, women's wear, childrens wear and its description.

Types of labels: Size label, brand label, wash care label, designer label.

UNIT V Defects in garment, pressing and Packing 9

Defects: Common defects in woven fabric, knitted fabric and garment.

Garment pressing: Pressing types and pressing equipments.

Packing: Types of packing and different types of packing materials.

TOTAL: 45 hours

TEXT BOOKS

1. Rajkishore Nayak Rajiv Padhye, “**Garment Manufacturing Technology**” 1st Edition, woodhead publication, 2015.
2. Ganesan, P., Gopalakrishnan, D., Karthik, T, “**Apparel manufacturing technology**”, CRC Publication, 2016.
3. Gerry Cooklin, Steven George Hayes, John McLoughlin, Dorothy Fairclough. “**Cooklin's Garment Technology for Fashion Designers**”, John Wiley & Sons, 2011.

REFERENCE

1. EIRI Consultants and Engineers, “**Hand book of garment manufacturing technology**”, 2017.
2. Janace E. Bubonia, “**Apparel production terms and processes**”, 2017.
3. Harold Carr, Barbara Latham, “**The Technology of Clothing Manufacture**”, Wiley, 1994.

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester VIII Regulations 2019
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Practical							
1	U19FT801	Project Work	0	0	24	12	360
Total Credits						12	

Approved By

Chairperson, Fashion Technology BoS
Dr.D.Raja

Member Secretary, Academic Council
Dr.R.Shivakumar

Chairperson, Academic Council & Principal
Dr.S.R.R.Senthil Kumar

Copy to:-

HOD/Fashion Technology, Eighth Semester B.Tech FT Students and Staff, COE