

SONA COLLEGE OF TECHNOLOGY, SALEM-5

(An Autonomous Institution)

B.Tech-Fashion Technology

CURRICULUM and SYLLABI

[For students admitted in 2018-2019]

B.E / B.Tech Regulation 2015R

Approved by BOS and Academic Council meetings

SONA COLLEGE OF TECHNOLOGY, SALEM – 636 005
(An Autonomous Institution)

Courses of Study for BE/BTech Semester I under Regulations 2015R (CBCS)

Branch: FT

S.No.	Course Code	Course Title	L	T	P	C	Group code
Theory							
1	U15ENG101AR	Technical English – I	2	0	2	3	HS
2	U15MAT102AR	Mathematics – I	3	2	0	4	BS
3	U15PHY103AR	Engineering Physics	3	0	0	3	BS
4	U15CHE104AR	Engineering Chemistry	3	0	0	3	BS
5	U15CPR105AR	Programming in C	3	0	0	3	ES
6	U15EGR106AR	Engineering Graphics ¹	2	2	0	3	ES
Practical							
7	U15PCL107AR	Physics and Chemistry Laboratory-I ²	0	0	2	1	BS
8	U15CPL108AR	C Programming Laboratory	0	0	2	1	ES
9	U15EPL109R	Engineering Practices Laboratory ³	0	0	2	1	ES
Total Credits						22	
Optional Language Elective*							
10	U15OLE1101	French	0	0	2	1	HS
11	U15OLE1102	German					
12	U15OLE1103	Japanese					

* Students may opt for foreign languages viz., German/French/Japanese with additional one credit (over and above the CGPA calculation).

¹ The examination will be conducted for 3 hours through written and practical modes.

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

³ The lab examination will be conducted separately for Group A (Civil & Mechanical) and Group B (Electrical & Electronics) with 50 marks each with 1 ½ hours duration.

Approved by

HOD- First Year Dr. M. Renuga	Chairperson BOS/Civil & HOD-Civil Dr. R. Malathy	Chairperson BOS/EEE & HOD-EEE Dr. S. Padma	Chairperson BOS/ Mechanical & Mechatronics HOD-Mechanical Dr. D. Senthilkumar	Chairperson BOS/ FT & HOD-FT Dr. G. Gunasekaran
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Member Secretary, Academic Council
Dr. R. Shivakumar

Chairperson, Academic Council & Principal
Dr. S.R.R. Senthilkumar

SONA COLLEGE OF TECHNOLOGY, SALEM – 636 005
(An Autonomous Institution)

Courses of Study for BE / B Tech Semester II under Regulations 2015R (CBCS)

Branch: FT

S.No.	Course Code	Course Title	L	T	P	C	Group code
Theory							
1	U15ENG201AR	Technical English –II	2	0	2	3	HS
2	U15MAT202AR	Mathematics – II	3	2	0	4	BS
3	U15PHY203ER	Applied Physics	3	0	0	3	BS
4	U15CHE205DR	Chemistry For Textile Technology	3	0	0	3	BS
5	U15PSC206R	Problem Solving in C [#]	3	0	0	3	ES
6	U15FTY207R	Fibre Science and Technology	3	0	0	3	ES
Practical							
7	U15PCL208AR	Physics and Chemistry Laboratory – II ⁵	0	0	2	1	BS
8	U15PSL209R	Problem Solving in C Laboratory [#]	0	0	2	1	ES
9	U15FTL210R	Fibre Analytical Laboratory	0	0	4	2	ES
Total Credits						23	
Optional Language Elective*							
10	U15OLE1201	French	0	0	2	1	HS
11	U15OLE1202	German					
12	U15OLE1203	Japanese					

*Students may opt for foreign languages viz., German/French/Japanese with additional one credit (over and above the CGPA calculation).

[#] Common to CIVIL & FT

⁵Laboratory classes on alternate weeks for Physics and Chemistry. The lab examination will be conducted separately for 50 marks each with 2 hours duration.

Approved by

HOD-First Year Dr. M. Renuga	Chairperson BOS/FT & HOD-Fashion Technology Dr. G. Gunasekaran	Member Secretary, Academic Council Dr. R. Shivakumar	Chairperson, Academic Council & Principal Dr. S.R.R. Senthilkumar
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Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester III under Regulations 2015R (CBCS)
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	U15MAT301FR	Probability and Statistical Quality Control	3	2	0	4
2	U15GE302R	Basics of Mechanical and Electrical Engineering	3	0	0	3
3	U15CHE304R	Environmental Science and Engineering	3	0	0	3
4	U15FT301R	Technology of Yarn Manufacture	3	0	0	3
5	U15FT302R	Fashion Art and Design	3	0	0	3
6	U15FT303R	Pattern Engineering	3	0	0	3
Practical						
7	U15FT304R	Pattern Making and Grading Laboratory	0	0	4	2
8	U15FT305R	Fashion Illustration Laboratory	0	0	2	1
9	U15GE301R	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 BE FT Students and Staff, COE

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester IV under Regulations 2015R (CBCS)
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	U15FT401R	History of Costumes and Accessories Designing	3	0	2	4
2	U15FT402R	Woven Fabric Manufacture and Structure	3	0	0	3
3	U15FT403R	Knitted Fabric Manufacture and Structure	3	0	0	3
4	U15FT404R	Chemical Processing of Textiles and Garments	3	0	2	4
5	U15FT405R	Garment Construction-I	3	0	0	3
Practical						
6	U15FT406R	Fabric Structure and Textile CAD Laboratory	0	0	2	1
7	U15FT407R	Garment Construction Laboratory - I	0	0	4	2
8	U15ENG401R	Communication Skills Laboratory	0	0	2	1
9	U15FT408R	In-Plant Training	0	0	0	1
10	U15GE401R	Soft Skills and Aptitude - II	0	0	2	1
Total Credits						23

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Copy to:-
HOD/Fashion Technology, Fourth Semester BE FT Students and Staff, COE

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester V under Regulations 2015R (CBCS)
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	U15FT501R	Garment Construction-II	3	0	0	3
2	U15FT502R	Garment Production Machinery and Equipment	3	0	0	3
3	U15FT503R	Apparel Production Planning and Control	3	0	0	3
4	U15FT504R	Clothing Size, Fit and Comfort	3	0	0	3
5	U15FT901R	Elective - Computer Applications in the Garment Industry	3	0	0	3
	U15FT904R	Elective - Visual Merchandising				
Practical						
6	U15FT505R	Garment Construction Laboratory - II	0	0	4	2
7	U15FT506R	Apparel Machinery Laboratory	0	0	2	1
8	U15FT507R	In-Plant Training	0	0	0	1
9	U15GE501R	Soft Skills and Aptitude -III	0	0	2	1
Total Credits						20

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Copy to:-

HOD/Fashion Technology, Fifth 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 VI under Regulations 2015R (CBCS)
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	U15GE602BR	Principles of Management	3	0	0	3
2	U15FT601R	Textile Testing and Quality Assurance in Apparel Production	3	0	0	3
3	U15FT602R	Apparel Merchandising and Marketing	3	0	0	3
4	U15FT603R	Industrial Engineering in Garment Production	3	0	0	3
5	noc21-mg25	NPTEL – Six Sigma	3	0	0	3
	noc21-ge06	NPTEL – Entrepreneurship Essentials				
6	U15CE1002R	Open Elective - Disaster Management	3	0	0	3
	U15CE1004R	Open Elective - Municipal Solid Waste Management				
	U15CS1003R	Open Elective - Internet of Things				
	U15ME1004R	Open Elective - Industrial Safety				
	U15MC1002R	Open Elective - 3D Printing Technology				
	U15CS1004R	Open Elective - Mobile Application Development				
	U15CE1003R	Open Elective - Energy Efficiency And Green Building				
	U15EC1006R	Open Elective - Sensors and Smart Structures Technologies				
	U15ME1002R	Open Elective - Renewable Energy Sources				
	U15EE1006R	Open Elective - Renewable Energy Systems				
	U15IT1004R	Open Elective - Python Programming				
U15IT1005R	Open Elective - Introduction to Database Technology					
Practical						

7	U15FT604R	Textile Testing and Quality Control Laboratory	0	0	2	1
8	U15FT605R	Computer- Aided Garment Design Laboratory	0	0	4	2
9	U15GE601BR	Soft Skills and Aptitude - IV	0	0	2	1
					Total Credits	22

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Copy to:-

HOD/Fashion Technology, Sixth 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 VII 2015R (CBCS)
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Theory							
1	U15GE701R	Professional Ethics and Human Values	3	0	0	3	45
2	U15FT701R	Apparel Costing and Export Documentation	3	0	0	3	45
3	U15FT910R	Elective - Fashion Forecasting and Portfolio Development	3	0	0	3	45
	U15FT911R	Elective - Advances in Garment Production					
	U15FT913R	Elective - Fashion Photography					
4	U15FT915R	Elective - Entrepreneurship Development and Management of Apparel Unit	3	0	0	3	45
	U15FT916R	Elective - Textiles in Interior Décor					
	U15FT918R	Elective - Fashion Business Management					
5	U15FT921R	Elective - Retail Management	3	0	0	3	45
6	U15ME1010R	Open Elective - 3D printing	3	0	0	3	45
	U15MC1002R	Open Elective - 3D Printing Technology					
	U15CE1002R	Open Elective - Disaster Management					
	U15CE1003R	Open Elective - Energy Efficiency And Green Building					
	U15ME1004R	Open Elective - Industrial Safety					
	U15EE1007R	Open Elective - Innovation, IPR and entrepreneurship Development					
	U15ME1005R	Open Elective - Maintenance Engineering					
	U15EC1008R	Open Elective - Mobile Technology and its application					
	U15ME1002R	Open Elective - Renewable Energy Sources					
U15EE1006R	Open Elective - Renewable Energy Systems						

Practical							
7	U15FT702R	Garment Construction Laboratory - III	0	0	2	1	30
8	U15FT703R	Apparel Production and Quality Evaluation Laboratory	0	0	2	1	30
9	U15FT704R	Fashion Portfolio Development	0	0	4	2	60
10	U15FT705R	Internship	0	0	0	3	2 months
						Total Credits	25

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Chairperson, Academic Council & Principal

Dr.S.R.R.Senthil Kumar

Copy to:-

HOD/Fashion Technology, Seventh 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 VIII 2015R (CBCS)
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Practical							
1	U15FT801R	Project Work	0	0	24	12	360
Total Credits						12	

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Copy to:-

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

SONA COLLEGE OF TECHNOLOGY, SALEM – 636 005
(An Autonomous Institution)

Courses of Study for BE/BTech Semester I under Regulations 2015R (CBCS)

Branch: FT

S.No.	Course Code	Course Title	L	T	P	C	Group code
Theory							
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2	U15MAT102AR	Mathematics – I	3	2	0	4	BS
3	U15PHY103AR	Engineering Physics	3	0	0	3	BS
4	U15CHE104AR	Engineering Chemistry	3	0	0	3	BS
5	U15CPR105AR	Programming in C	3	0	0	3	ES
6	U15EGR106AR	Engineering Graphics ¹	2	2	0	3	ES
Practical							
7	U15PCL107AR	Physics and Chemistry Laboratory-I ²	0	0	2	1	BS
8	U15CPL108AR	C Programming Laboratory	0	0	2	1	ES
9	U15EPL109R	Engineering Practices Laboratory ³	0	0	2	1	ES
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12	U15OLE1103	Japanese					

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¹ The examination will be conducted for 3 hours through written and practical modes.

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³ The lab examination will be conducted separately for Group A (Civil & Mechanical) and Group B (Electrical & Electronics) with 50 marks each with 1 ½ hours duration.

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HOD- First Year Dr. M. Renuga	Chairperson BOS/Civil & HOD-Civil Dr. R. Malathy	Chairperson BOS/EEE & HOD-EEE Dr. S. Padma	Chairperson BOS/ Mechanical & Mechatronics HOD-Mechanical Dr. D. Senthilkumar	Chairperson BOS/ FT & HOD-FT Dr. G. Gunasekaran
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Dr. R. Shivakumar

Chairperson, Academic Council & Principal
Dr. S.R.R. Senthilkumar

UI5ENG101AR - TECHNICAL ENGLISH I

L	T	P	C	M
2	0	2	3	100

Course Outcomes

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

1. frame sentences correctly, both in written and spoken forms of language with accuracy and fluency.
2. develop and demonstrate listening skills for academic and professional purposes.
3. draw conclusions on explicit and implicit oral information.
4. develop effective reading skills and reinforce language skills required for using grammar and building vocabulary.
5. read for gathering and understanding information, following directions and giving responses.

UNIT I – FOCUS ON LANGUAGE

- General Vocabulary
- Prefixes and Suffixes
- Active and Passive Voices
- Adjectives, Comparative Adjectives
- Prepositions and Dependent Prepositions
- Collocations
- Tenses
- Modal Verbs and Probability

UNIT II – LISTENING - I

- 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.

UNIT III – LISTENING – II

- 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.

UNIT IV – READING -I

- 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.
- Oral reading – poetry and prose excerpts, general and technical articles, and anecdotes.

UNIT V – READING -II

- 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.
- Short reading passage: gap-filling exercise related to grammar, testing the understanding of prepositions, articles, auxiliary verbs, modal verbs, pronouns, relative pronouns and adverbs.
- Short reading passage with multiple choice questions, gap-filling exercise testing the knowledge of vocabulary, collocations, dependent prepositions, grammatical structures.
- Short reading passages for sentence matching exercises, picking out specific information in a short text.

Total: 45 Hours

Listening test will be conducted for 20 marks internally and evaluated along with Technical English – I in the End Semester Valuation.

Reading test will be conducted for 20 marks internally and evaluated by internal examiners.

TEXTBOOK

1. Technical English – I & II, Dr. M. Renuga, et al. Sonaversity, Sona College of Technology, Salem, Revised edition, 2016.

EXTENSIVE READING

1. The Story of Amazon.com- Sara Gilbert, published by Jaico
2. The Story of Google – Sara Gilbert, published by Jaico

REFERENCE BOOKS

1. Norman Whitby, Business Benchmark – Pre-Intermediate to Intermediate, Students Book, Cambridge University Press, 2006.
2. A Course in Communication Skills, P. Kiranmai Dutt, Geetha Rajeevan, C. L. N. Prakash, published by Cambridge University Press India Pvt. Ltd.

U15MAT102AR - MATHEMATICS – I

(Common to Civil, Mech, Mechatronics, EEE, IT and FT Branches)

L T P C M

3 2 0 4 100

Course Outcomes

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

1. find the Eigen values and Eigen vectors of a real matrix and discuss their properties, reduce a real symmetric matrix from quadratic form to canonical form.
2. explain the three dimensional Cartesian coordinates and discuss the problems in straight line, plane and sphere.
3. describe curvature and find the radius of curvature, circle of curvature, evolutes, involutes and envelope of curves.
4. explain functions of several variables and find the Taylor's series expansion, Jacobians, maximum and minimum values of function of several variables.
5. describe the double and triple integrals, discuss the change of order of integration and find the area and volume by multiple integrals.

UNIT I – MATRICES

9+6

Characteristic equation – Eigen values and Eigen vectors of a real matrix – properties – statement of Cayley – Hamilton theorem and its applications – orthogonal transformation of symmetric matrix to diagonal form – quadratic form – reduction of quadratic form to canonical form by orthogonal transformation.

UNIT II – THREE DIMENSIONAL ANALYTICAL GEOMETRY 9+6

Direction cosines and ratios, angle between two lines – equation of plane, angle between two planes – equation of the straight line, coplanar lines, skew lines – equation of a sphere, plane section of a sphere, tangent plane, orthogonal spheres.

UNIT III – DIFFERENTIAL CALCULUS AND ITS APPLICATIONS

9+6

Curvature in Cartesian coordinates, centre and radius of curvature, circle of curvature – evolutes, envelopes, evolute as the envelope of normals.

UNIT IV – FUNCTIONS OF SEVERAL VARIABLES

9+6

Partial derivatives, total differentiation – differentiation of implicit functions – Taylor’s expansion – maxima and minima, constrained maxima and minima by Lagrange’s multiplier method – Jacobians – properties.

UNIT V – MULTIPLE INTEGRALS

9+6

Evaluation of double integrals in Cartesian and polar coordinates – change of order of integration – change of variables from Cartesian to polar coordinates – area as double integral – evaluation of triple integrals in Cartesian coordinates – volume as triple integral in Cartesian coordinates.

Total: 75 Hours

TEXT BOOKS

1. B.S.Grewal, “Higher Engineering Mathematics”, Khanna Publishers, New Delhi, 43rd Edition, 2014.
2. T.Veerarajan, “Engineering Mathematics” (I Year), Tata McGraw Hill, 4th Edition, 2011.

REFERENCE BOOKS

1. P.Kandasamy, K.Thilagavathy and K.Gunavathy, “Engineering Mathematics”, (for first year), S. Chand and Co., Ltd., Revised Edition 2011.
2. E.Kreyszig, “Advanced Engineering Mathematics”, International Student Version, Wiley, 10th Edition, 2015.
3. S. Jayabharathi, “Mathematics - I”, Sonaversity, Revised Edition, 2017.
4. N. P. Bali and M. Goyal, “Engineering Mathematics”, University Science Press, New Delhi, 9th Edition, 2011.

U15PHY103AR - ENGINEERING PHYSICS

(Common to B.E. Mech, Mechatronics, Civil, EEE, CSE & B.Tech. IT, FT Branches)

L	T	P	C	M
3	0	0	3	100

Course Outcomes

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

1. design acoustically good buildings and describe the applications of ultrasonic waves in the field of non-destructive testing
2. classify lasers and explain its applications in the field of medicine, engineering and technology.
3. elucidate the principle of optical fibre communication, applications and the devices involved in the transmission and reception of data.
4. illustrate the dual nature of matter and radiation and its applications.
5. analyze crystal structures and the significance of defects in crystals.

UNIT I – ACOUSTICS AND ULTRASONICS

9

Classification of sound, Pitch, Loudness, Intensity level, Phon, Timbre, Reverberation, Reverberation time – Sabine's formula and its importance (no derivation) – Sound absorbing materials - Absorption Coefficient and its determination – Factors affecting acoustics of buildings and their remedies – Production of ultrasonic waves by magnetostriction and piezoelectric methods – acoustic grating – Acoustic impedance - Non Destructive Testing – Ultrasonic flaw detector – A scan display - Sonogram (block diagram).

UNIT II – LASERS

9

Principle of spontaneous and stimulated emission – Population inversion - Pumping – Einstein's A and B coefficients derivation – Basic requirements of a laser - Types of lasers – Nd:YAG laser, CO₂ and Semiconductor lasers (homojunction & heterojunction) – Qualitative applications – Lasers in welding, heat treatment and cutting – Medical applications (qualitative) – holography construction and reconstruction.

UNIT III – FIBRE OPTICS AND APPLICATIONS

9

Principle and propagation of light in optical fibers – Numerical aperture and acceptance angle – Types of optical fibres (material, refractive index, mode) – Double Crucible Technique of fibre drawing – Splicing – Loss in optical fibre – attenuation, dispersion

and bending - Fibre optic communication system (Block diagram) – Fibre optic sensors
- temperature and displacement sensor - Endoscope.

UNIT IV – QUANTUM PHYSICS

9

Introduction – Compton Effect theory and experimental verification – Matter waves
– Schrodinger’s time independent and time dependent wave equation - Physical
significance of the wave function – Particle in a one dimensional box – Evolution of
microscope - Electron microscope – Comparison of optical and electron microscope -
Scanning electron microscope.

UNIT V – CRYSTALLOGRAPHY

9

Crystalline Solids – Amorphous solids – Space Lattice - Unit cell – Bravais lattice –
Lattice planes – Miller indices – 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.

Total: 45 Hours

TEXT BOOKS

1. B. K. Pandey and S. Chaturvedi, Engineering Physics , Cengage Learning India Pvt. Ltd., Delhi, 2012.
2. M. Arumugam, ‘Engineering Physics’ Anuradha Publications, Kumbakonam, 2006.

REFERENCE BOOKS

1. C. Shanthi et al., Engineering Physics, Sonaversity, Sona College of Technology, Salem (Revised edition, 2016).
2. R. K. Gaur and S.C. Gupta, Engineering Physics, Dhanpat Rai Publications, New Delhi, 2003.
3. V. Rajendran and A. Marikani, Engineering Physics, Tata Mc Graw Hill Publications Ltd, III Edition, New Delhi, 2004.
4. M.N. Avadhanulu and PG Kshirsagar, A Text book of Engineering Physics, S.Chand and company, Ltd., New Delhi, 2005.

U15CHE104AR - ENGINEERING CHEMISTRY

(Common to BE - Civil, EEE, Mech, Mechatronics & BTech - FT)

L	T	P	C	M
3	0	0	3	100

Course Outcomes

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

1. analyze the types of impurities present in water, their removal methods and explain the conditioning methods for domestic and industrial uses.
2. outline the principles and applications of electrochemistry to engineering and technology.
3. compare the types of corrosion and describe the methods of corrosion control.
4. outline the principle and applications of surface chemistry and catalysis in engineering and technology.
5. illustrate the basics of nano chemistry, synthesis, properties and applications of nano materials in engineering and technology.

UNIT I – WATER TECHNOLOGY

9

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 - Domestic water treatment – screening, sedimentation – coagulation – aeration – sand filtration and disinfection methods – Chlorination – ozonation and UV treatment.

UNIT II – ELECTROCHEMISTRY

9

Electrode potential - Nernst Equation - derivation and problems based on single electrode potential calculation - reference electrodes - standard hydrogen electrode - calomel electrode – Ion selective electrode - glass electrode - measurement of pH – electrochemical series – significance – electrolytic and electrochemical cells – reversible and irreversible cells – EMF – measurement of emf – potentiometric titrations (redox – Fe^{2+} vs dichromate) – conductometric titrations (acid-base – HCl vs NaOH).

UNIT III – CORROSION AND CORROSION CONTROL

9

Chemical corrosion - Pilling-Bedworth rule – electrochemical corrosion – mechanism - galvanic corrosion – differential aeration corrosion – factors influencing corrosion – corrosion control – sacrificial anode and impressed cathodic current methods – corrosion inhibitors – protective coatings – preliminary treatment - Paints constituents and their functions – surface conversion coatings – Galvanizing and Tinning.

UNIT IV – SURFACE CHEMISTRY AND CATALYSIS

9

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– ion exchange adsorption-basic principles in adsorption chromatography – adsorption in pollution abatement (granular activated carbon and powdered activated carbon) – catalysis-types - characteristics of catalysts - autocatalysis - definition and examples.

UNIT V – NANOCHEMISTRY

9

Basics - distinction between molecules, nanoparticles and bulk materials – size-dependent properties – nanoparticles: nano cluster, nano rod, nanotube (CNT) and nanowire – Synthesis: precipitation – thermolysis – hydrothermal – solvothermal – electrodeposition - chemical vapour deposition - sol-gel technique – properties and applications of nano materials.

Total: 45 Hours

TEXT BOOKS

1. P.C.Jain and Monica Jain, “Engineering Chemistry” Dhanpat Rai Pub, Co., New Delhi, 2010 (15th Edition).
2. B. Sivasankar “Engineering Chemistry” Tata McGraw-Hill Pub.Co.Ltd, New Delhi, 2008.

REFERENCE BOOKS

1. T. Maruthavanan et al., "Engineering Chemistry", Sonaversity, Sona College of Technology, Salem, Revised Edition 2018.
2. Kannan P., Ravikrishnan A., "Engineering Chemistry", Sri Krishna Hi-tech Publishing Company Pvt. Ltd., Chennai, 2009.
3. H.K. Chopra, A. Parmer, "Chemistry for Engineers", Narosa Publishing House, New Delhi, 110 002, 2016.
4. Ozin G. A. and Arsenault A. C., "Nanochemistry: A Chemical Approach to Nanomaterials", RSC Publishing, 2005.

U15CPR105AR - PROGRAMMING IN C

(Common to BE - CIVIL, CSE, EEE, MECH, Mechatronics, B.Tech - FT, IT)

L	T	P	C	M
3	0	0	3	100

Course Outcomes

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

1. formulate problems, apply logics to solve problems by practice and outline the basics of computer technology
2. write, compile and find errors in simple c programs
3. apply the concepts such as arrays, decision making and looping statements to solve real-time applications
4. examine the power of functions and pointers to become expert programmers in c
5. solve simple scientific and statistical problems using structures and unions

UNIT I – INTRODUCTION TO PROBLEM SOLVING AND COMPUTERS

8

Problem formulation, Problem Solving methods, Need for logical analysis and thinking – Algorithm – Pseudo code – Flow Chart. Need for computer languages, Generation and Classification of Computers- Basic Organization of a Computer

UNIT II – C PROGRAMMING BASICS

10

Structure of a C program – Compiling and Debugging a C program - C Character set, Identifiers and Keywords, Data Types, Declarations, Expressions, Statements and Symbolic constants, Operators – Arithmetic Operators – Unary operators – Relational and Logical Operators – Assignment operators – Conditional operators. Managing Input and Output operations, pre-processor directives and storage classes

UNIT III – CONTROL STATEMENTS, ARRAYS AND STRINGS

9

Unconditional statements, conditional statements, branching and looping statements - Arrays – Initialization – Declaration – One dimensional and Two dimensional arrays. String- String operations – String Arrays. Simple programs- sorting- searching – matrix operations and solving simple scientific and statistical problems

UNIT IV – FUNCTIONS AND POINTERS

9

Function – Library functions and user-defined functions – Function prototypes and function definitions – Call by value – Call by reference – Recursion – Pointers - Definition – Initialization – Pointers arithmetic – Pointers and arrays- Example Problems. Pointers and Functions

UNIT V – STRUCTURES AND UNIONS

9

Introduction – need for structure data type – structure definition – Structure declaration – Structure within a structure – Passing structures to functions – Array of structures – Pointers to structures. Union - Programs using structures and Unions

Total: 45 Hours

TEXT BOOKS

1. Yashavant P. Kanetkar, “Let Us C”, BPB Publications, 2011.
2. Balagurusamy E, “Programming in ANSI C”, sixth edition, Tata McGraw-Hill, 2012.

REFERENCE BOOKS

1. Deitel and Deitel, “C How to Program”, Pearson Education, New Delhi, 2011.
2. Byron S Gottfried, “Programming with C”, Schaums Outlines, Second Edition, Tata McGraw-Hill, 2006.
3. Kernighan, B.W and Ritchie, D.M, “The C Programming language”, Second Edition, Pearson Education, 2006.
4. Anita Goel and Ajay Mittal, “Computer Fundamentals and Programming in C”, Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.

U15EGR106AR - ENGINEERING GRAPHICS

L	T	P	C	M
2	2	0	3	100

Course Outcomes

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.
4. draw the principles of projection of simple solid by the axis is inclined to one reference plane by change of position method. understand the interior components of machinery (or) buildings by sectioning the solid,
5. study the development of simple solids for fabrication of sheet metals.

CONCEPTS AND CONVENTIONS (Not for Examination) 12

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) 12

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

UNIT I – PLANE CURVES (Free hand sketching) 12

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

12

(Free Hand Sketching)

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 AND PLANE SURFACES

(Free hand sketching and 2D Software)

12

Projection of points – Projection of straight lines located in the first quadrant – Determination of true lengths and true inclinations – Projection of polygonal surface and circular lamina inclined to one reference planes.

UNIT IV – PROJECTION OF SOLIDS

12

(Free hand sketching and 2D Software)

Projection of simple solids like prisms – pyramids – cylinder and cone when the axis is inclined to one reference plane by change of position method.

UNIT V – SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES

(Free hand sketching and 2D Software)

12

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, (Obtaining true shape of section is not required). Development of lateral surfaces of simple and truncated solids – Prisms – pyramids – cylinders and cones.

TEXT BOOKS

1. P. Suresh et al., “Engineering Graphics and Drawing”, Sonaversity, Sona College of Technology, Salem, Revised edition, 2012.
2. K.V. Natarajan Engineering Graphics by, Chennai, 17th edition 2003.

REFERENCE BOOKS

1. Dhananjay A. Jolhe, Engineering Drawing with an introduction to AutoCAD, Tata McGraw Hill Publishing Company Limited, 2008.
2. Basant Agarwal and Agarwal C.M., Engineering Drawing, Tata McGraw Hill Publishing Company Limited, New Delhi, 2008.
3. K. R. Gopalakrishnana, Engineering Drawing (Vol. I & II), Subhas Publications, 1998.
4. Bertoline & Wiebe, fundamentals of graphics communication, III edition McGrawhill 2002.

U15PCL107AR - PHYSICS AND CHEMISTRY LABORATORY I

(Common to Civil, EEE, Mech, Mechatronics & FT Branches)

L	T	P	C	M
0	0	2	1	100

Course Outcomes

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

1. apply the principles of optics, thermal physics and elasticity to determine the engineering properties of materials.
2. analyse the given water sample to determine the amount of hardness and alkalinity.
3. determine the thickness of the given copper turn used for house hold applications and evaluate the amount of alkalinity, pH, conductivity and iron content of house hold water sample.

List of Experiments – (PHYSICS PART)

1. Determination of the thickness of a thin wire by forming interference fringes using air wedge apparatus.
2. Determination of the wavelength and velocity of ultrasonic waves and the compressibility of a given liquid using the ultrasonic interferometer.
3. Determination of thermal conductivity of a bad conductor using Lee's disc apparatus.
4. Determination of the angle and dispersive power of a given prism using a spectrometer.
5. Determination of laser wavelength, particle size (lycopodium powder), acceptance angle and numerical aperture of an optical fibre using a diode laser.
6. Determination of the Young's modulus of a given material by non-uniform bending method.

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

List of Experiments – (CHEMISTRY PART)

1. Estimation of hardness of water by EDTA method.
2. Estimation of alkalinity of water by indicator method.
3. Estimation of hydrochloric acid by pH metry.
4. Conductometric titration of strong acid vs strong base (HCl vs NaOH).
5. Estimation of ferrous iron by potentiometric titration (Fe^{2+} vs dichromate).
6. Estimation of corrosion in iron sheets by weight loss method.

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

Total: 30 Hours

U15CPL108AR - C PROGRAMMING LABORATORY

(Common to BE - CIVIL, CSE, EEE, MECH, Mechatronics & BTech FT, IT)

L	T	P	C	M
0	0	2	1	100

Course Outcomes

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

1. design and develop simple programs using branching, looping statements, functions and arrays
2. develop programs using structures, strings, pointers and recursion
3. effectively choose programming components that efficiently solve computing problems in real-world

List of Experiments

1. Programs using Input, Output and assignment statements
2. Programs using Branching statements
3. Programs using Looping statements
4. Programs using Functions
5. Programs using one dimensional and two dimensional arrays
6. Programs using Structures
7. Programs using Strings
8. Programs using Pointers (both data pointers and function pointers)
9. Programs using Recursion

Total: 30 Hours

U15EPL109R - ENGINEERING PRACTICES LABORATORY

(Common to all Branches)

L	T	P	C	M
0	0	2	1	100

Course Outcomes

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

1. plan the pipe connections using PVC, G.I pipes
2. analyze the process of wood separation with proper types of joints using tools and machines
3. demonstrate the method of material removal from metal components and assemble the components using sheet metals
4. demonstrate the working principles of house wiring and Fluorescent lamp wiring
5. analyze the functions of logic gates (AND, OR, NOT, NAND, NOR and Ex-OR)

List of Experiments

GROUP A (CIVIL & MECHANICAL)

1. CIVIL ENGINEERING PRACTICE

PLUMBING WORKS

- a. Basic pipe connections (PVC) involving the fittings like Valves, Taps, and Bends.
- b. Mixed pipe (PVC and G.I) connections involving the fitting like Valves, Taps, and Bends

CARPENTRY WORKS

- a. Planning
- b. Lap joint
- c. Cross lap joint

II MECHANICAL ENGINEERING PRACTICE

SHEET METAL WORK

- a. Square tray
- b. Funnel

FITTING WORK

- a. L joint
- b. V-joint
- c. Demonstration of Welding classes

GROUP B (ELECTRICAL & ELECTRONICS)

ELECTRICAL ENGINEERING

1. Study of Resistor, Inductor and capacitor-ratings-colour coding-series and parallel equivalence.
2. House wiring
3. Fluorescent lamp wiring.
4. Stair-case Wiring and Door bell wiring
5. Measurement of circuit parameters for RLC series circuit..
6. Measurement of Energy using Energy meter for Single Phase system.
7. Study of Fan and Iron Box.

ELECTRONICS ENGINEERING

1. Verification of Ohm's Law
2. Measurement of Amplitude and frequency of AC wave forms using CRO.
3. Verification of logic gates (AND, OR, NOT, NAND, NOR and ExOR).
4. Generation of Clock Signal using IC 555 timer.
5. Soldering practice - Components Devices and Circuits - Using general purpose PCB.
6. Study of Multimeter

Total: 45 Hours

SONA COLLEGE OF TECHNOLOGY, SALEM – 636 005
(An Autonomous Institution)

Courses of Study for BE / B Tech Semester II under Regulations 2015R (CBCS)

Branch: FT

S.No.	Course Code	Course Title	L	T	P	C	Group code
Theory							
1	U15ENG201AR	Technical English –II	2	0	2	3	HS
2	U15MAT202AR	Mathematics – II	3	2	0	4	BS
3	U15PHY203ER	Applied Physics	3	0	0	3	BS
4	U15CHE205DR	Chemistry For Textile Technology	3	0	0	3	BS
5	U15PSC206R	Problem Solving in C [#]	3	0	0	3	ES
6	U15FTY207R	Fibre Science and Technology	3	0	0	3	ES
Practical							
7	U15PCL208AR	Physics and Chemistry Laboratory – II ⁵	0	0	2	1	BS
8	U15PSL209R	Problem Solving in C Laboratory [#]	0	0	2	1	ES
9	U15FTL210R	Fibre Analytical Laboratory	0	0	4	2	ES
Total Credits						23	
Optional Language Elective*							
10	U15OLE1201	French	0	0	2	1	HS
11	U15OLE1202	German					
12	U15OLE1203	Japanese					

*Students may opt for foreign languages viz., German/French/Japanese with additional one credit (over and above the CGPA calculation).

[#] Common to CIVIL & FT

⁵Laboratory classes on alternate weeks for Physics and Chemistry. The lab examination will be conducted separately for 50 marks each with 2 hours duration.

Approved by

HOD-First Year Dr. M. Renuga	Chairperson BOS/FT & HOD-Fashion Technology Dr. G. Gunasekaran	Member Secretary, Academic Council Dr. R. Shivakumar	Chairperson, Academic Council & Principal Dr. S.R.R. Senthilkumar
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U15ENG201AR - TECHNICAL ENGLISH II

L	T	P	C	M
2	0	2	3	100

Course Outcomes

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

1. use grammatical components effectively in both written and spoken communication
2. develop speaking skills for self introduction, delivering speeches and technical presentation.
3. speak effectively in real time and business situations
4. write emails, formal letters and descriptions of graphics
5. develop skills for writing reports and proposals

UNIT I – FOCUS ON LANGUAGE

- Cause and effect expressions
- Concord
- If conditionals
- Articles
- Pronouns
- Adverbs
- Grammatical structures

UNIT II – SPEAKING-I

- 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.

UNIT III – SPEAKING – II

- 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.

UNIT IV – WRITING – I

- Email, fixing an appointment, Cancelling appointments, conference details, hotel accommodation, order for equipment, training programme details, paper submission for seminars and conferences.
- Letter Writing, Business communication, quotations, placing orders, complaints, replies to queries from business customers, inviting dignitaries, accepting and declining invitations.
- Resume / CV.
- Transcoding: Flow Chart, Pie Chart, Graph, Bar Chart, Tabular Column.

UNIT V – WRITING -II

- Technical report writing, feasibility reports, accident reports, survey reports.
- General purpose writing specifications of equipment, description of an object, National and International issues, answering general questions with special emphasis on seeking opinions.
- Technical Writing: recommendations, checklists, instructions, note making and memo.
- Proposal: establishing a lab, introducing a subject in the curriculum, training programme for students.

Total: 45 Hours

Speaking test will be conducted for 20 marks externally and evaluated along with Technical English –II in the End Semester Valuation.

TEXTBOOK

Technical English – I & II, Dr. M. Renuga, et al. Sonaversity, Sona College of Technology, Salem, Revised edition, 2016.

EXTENSIVE READING

1. Who Moved my Cheese? – Spencer Johnson-G. P. Putnam's Sons
2. "Discover the Diamond in You" – Arindam Chaudhuri – Vikas Publishing House Pvt. Ltd.

REFERENCE BOOKS

1. Norman Whitby, Business Benchmark – Pre-Intermediate to Intermediate, Students Book, Cambridge University Press, 2006.
2. A Course in Communication Skills, P. Kiranmai Dutt, Geetha Rajeevan, C. L. N. Prakash, published by Cambridge University Press India Pvt. Ltd.

U15MAT202AR - MATHEMATICS – II

(Common to Civil, Mech, Mechatronics, EEE, IT and FT Branches)

L	T	P	C	M
3	2	0	4	100

Course Outcomes

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

1. explain the different types of ordinary differential equations and describe the various methods to solve ordinary differential equations.
2. define and explain the vector functions, operators and discuss the methods of solving line, surface and volume integrals.
3. state the special features of function of a complex variable, properties and discuss the problems involving conformal mapping.
4. describe the power series expansion of a complex function and the procedures of evaluating the complex integral.
5. define laplace transform, its inverse, properties and solve an ordinary differential equation using laplace transform.

UNIT – I ORDINARY DIFFERENTIAL EQUATIONS

9+6

Linear higher order ordinary differential equations with constant coefficients – Cauchy’s and Legendre’s homogeneous linear ordinary differential equations – method of variation of parameters.

UNIT – II VECTOR CALCULUS

9+6

Vector differentiation: Scalar and vector valued functions, gradient, directional derivative, divergence and curl, scalar potential.

Vector integration: Line, surface and volume integrals, statement of Green’s, Stoke’s and Gauss divergence theorems, simple applications involving squares, rectangles, cubes and rectangular parallelepiped.

UNIT – III ANALYTIC FUNCTIONS

9+6

Function of a complex variable, analytic function, necessary conditions and sufficient conditions (excluding proof), properties of an analytic function, harmonic conjugate, construction of an analytic function by Milne’s Thomson method, conformal mapping: $w = z + c$, cz , $1/z$ and bilinear transformation.

UNIT – IV COMPLEX INTEGRATION

9+6

Statement of Cauchy's integral theorem and Cauchy's integral formula, simple applications, Taylor's and Laurent's expansions, singular points, residues, statement of Cauchy's residue theorem, evaluation of contour integration over unit circle and semi circle (excluding poles on real axis).

UNIT – V LAPLACE TRANSFORM

9+6

Laplace transform: conditions for existence, transform of elementary functions, basic properties, transform of derivatives and integrals, transform of unit step function and impulse function, transform of periodic functions.

Inverse Laplace transform: standard results – statement of convolution theorem and its applications, initial and final value theorems, solution of linear second order ordinary differential equations with constant coefficients using Laplace transformation.

Total: 75 Hours

TEXT BOOKS

1. B. S. Grewal, "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 43rd Edition, 2014.
2. T. Veerarajan, "Engineering Mathematics"(I Year), Tata McGraw Hill, 4th Edition, 2011.

REFERENCE BOOKS

1. P. Kandasamy, K. Thilagavathy and K. Gunavathy, "Engineering Mathematics", (for first Year), S. Chand and Co., Ltd., Revised Edition 2011.
2. E. Kreyszig., "Advanced Engineering Mathematics", John Wiley and Sons (Wiley Student Edition), 10th Edition, 2011.
3. S.Karthikeyan, R. Rajeswari, P. Senthilvadivu and R.Shivakumar, "Vector Calculus and Complex Analysis", Sonaversity, Revised Edition, 2017.
4. N. P. Bali, M. Goyal, "Engineering Mathematics", University Science Press, New Delhi, 9th Edition, 2011.

U15PHY203ER - APPLIED PHYSICS

L	T	P	C	M
3	0	0	3	100

Course Outcomes

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

1. examine the elastic, inelastic and visco-elastic behaviour of materials.
2. calculate electrical and thermal conductivity of conducting materials.
3. compare the types of magnetic materials and explain the applications of superconducting materials.
4. analyze various polarization mechanisms and the causes of breakdown in dielectric materials.
5. recognize the novel properties of phase change materials and nanomaterials.

UNIT I – ELASTIC PROPERTIES OF MATERIALS

9

Elasticity - Poisson's ratio and relation between moduli (qualitative) - Stress-strain diagram- Factors affecting elasticity - Bending of beams -Expression for bending moment Measurement of Young's modulus by uniform bending method - Torsion pendulum - Determination of rigidity modulus of a wire.

Elastic, Inelastic and Viscoelastic behavior

Elastic behavior- idea of atomic model, idea of modulus as a parameter of design, rubber like elasticity, Inelastic behaviour-relaxation process, visco-elastic behaviour- introduction to spring dashpot model.

UNIT II – CONDUCTING MATERIALS

9

Conductors – Classical free electron theory of metals – Electrical and thermal conductivity – Wiedemann – Franz law – Lorentz number – Draw backs of classical theory – Quantum theory –band theory of solids (qualitative treatment only) - Fermi distribution function – Effect of temperature on Fermi Function – Density of energy states – Carrier concentration in metals – Electrically conductive textiles.

UNIT III – MAGNETIC AND SUPERCONDUCTING MATERIALS 9

Origin of magnetic moment – Bohr magneton – Dia and para and ferromagnetic materials – Domain theory – Hysteresis – Soft and hard magnetic materials – Ferrites – applications – Magnetic hard disc.

Superconductivity - Properties - Types of super conductor – BCS theory of superconductivity(Qualitative) - High T_c superconductors – Applications of superconductors : SQUID, cryotron, magnetic levitation in trains.

UNIT IV – DIELECTRIC MATERIALS

9

Electrical susceptibility – Dielectric constant – Electronic, ionic, orientation and space charge polarization – Frequency and temperature dependence of polarization – Internal field – Clausius – Mosotti relation (derivation) – Physical significance of Maxwell's equations- Dielectric loss – Dielectric breakdown – Uses of dielectric materials (capacitor and transformer).

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 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 nanomaterials - Ball milling method and Chemical vapour deposition technique - Carbon nanotubes - Types of carbon nanotubes - CNT structure – properties and applications.

Total: 45 Hours

TEXT BOOKS

1. B.K. Pandey and S. Chaturvedi, Engineering Physics, Cengage Learning India Pvt. Ltd., Delhi, 2012.
2. M. Arumugam, 'Materials Science' Anuradha Publications, Kumbakonam, 2006.

REFERENCE BOOKS

1. C. Shanthy et al., Applied Physics, Sonaversity, Sona College of Technology, Salem (Revised edition, 2017).
2. N. Subramaniam, Brijlal, ' Properties of Matter', S. Chand Group, New Delhi, 2007 (Unit I).
3. V. Rajendran and A. Marikani, 'Materials science' TMH Publications, New Delhi, 2004.
4. S. Jayakumar, 'Materials science', R.K. Publishers, Coimbatore, 2008.

U15CHE205DR - CHEMISTRY FOR TEXTILE TECHNOLOGY

L	T	P	C	M
3	0	0	3	100

Course Outcomes

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

- analyze the types of polymers, polymerization reactions, polymerization techniques and fabrication methods of polymers for engineering applications.
- outline the basic concepts of chemical bonding.
- describe the instrumental methods of analysis and their importance.
- discuss the role and applications of organic compounds in textile industry.
- discuss the role and applications of inorganic compounds in textile industry.

UNIT I – POLYMERS AND COMPOSITES

9

Nomenclature of Polymers – Functionality – Types of Polymerization-Addition-Condensation and Copolymerization – Classification of Polymers – Free Radical Mechanism of Addition Polymerization – Properties of Polymers – Glass transition temperature – tacticity - Methods of Polymerization-Bulk-Solution-Emulsion and Suspension – Plastics – Moulding Constituents of Plastic – Moulding of Plastics into Articles-Injection-Compression and Blow Moulding – Thermoplastic and Thermosetting Resins – Engineering Plastics-Nylon 6,6-Polycarbonate and Polyurethane-Preparation-Properties and Applications - Rubbers-Types-Applications-Vulcanization of Rubber.– Composites-Constituents of Composites – Types of FRP Composites.

UNIT II – CHEMICAL BONDING

9

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 – INSTRUMENTAL METHODS OF ANALYSIS

9

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).

UNIT IV – ORGANIC COMPOUNDS FOR TEXTILE INDUSTRY 9

Cellulose – structure of cellulose – derivatives of cellulose – carboxy methyl 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 - azoic dyes – disperse dyes – reactive dyes – examples only - chemistry of reactive dyes – toxic dyes in wet processing.

UNIT V – INORGANIC COMPOUNDS FOR TEXTILE INDUSTRY 9

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

Total : 45 Hours

TEXT BOOKS

1. P.C.Jain and Monica Jain, “Engineering Chemistry” Dhanpat Rai Pub, Co., New Delhi , 2010.
2. B. Sivasankar, “Engineering Chemistry”, Tata McGraw-Hill Pub. Co. Ltd., New Delhi (2008).

REFERENCE BOOKS

1. G.Shanthi et al., “Chemistry For Textile Technology” by Sonaversity, Sona College of Technology, Salem, Revised Edition 2018.
2. Gowariker V.R. , Viswanathan N.V. and Jayadev Sreedhar, “Polymer Science”, New Age International P (Ltd.), Chennai, 2006
3. Gurdeep R. Chatwal, “Synthetic Organic Chemistry”, Himalaya Publishing House, Mumbai, 1994.
4. Dr. C.V. Koushik and Antao Irwin Josico, “Chemical Processing of Textiles – Preparatory Processes and Dyeing”, NCUTE Publication, New Delhi – 110 016.
5. ARUN BAHL and BAHL,”A Text Book of Organic Chemistry”, S. CHAND & Company Ltd., New Delhi, 2003.
6. B.K. Sharma, “Industrial Chemistry”, Krishna Prakasan Media (P) Ltd., Meerut.

U15PSC206R - PROBLEM SOLVING IN C

(Non Circuit branches: Mech, FT, Civil)

L T P C M

3 0 0 3 100

Course Outcomes

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

1. write c programs to solve problems using appropriate language features.
2. design and develop interactive real-time applications using files.
3. write programs using preprocessor directives and apply the concept of dynamic memory allocation.
4. write programs for several sorting and searching methods.
5. write programs using c graphics features.

UNIT I – C PROGRAMMING FUNDAMENTALS- A REVIEW 9

Conditional statements – Control statements – Functions – Arrays – Pointers - Variation in pointer declarations – Function Pointers – Function with Variable number of arguments – Structures and Unions

UNIT II – FILE HANDLING 9

File handling concepts – File read – write – binary and Stdio - File Manipulations
Command line arguments

UNIT III – PREPROCESSOR AND DYNAMIC MEMORY ALLOCATION 9

Preprocessor: Macro Substitution, File Inclusion, Compiler Control Directives –
Dynamic Memory Allocation: Library Functions for Dynamic Memory Allocation.

UNIT IV – SORTING AND SEARCHING TECHNIQUES 8

Sorting algorithms: Insertion Sort - Selection Sort - Bubble Sort - Merge Sort – Quick Sort- Shell Sort – Bucket Sort - Searching: Linear Search and Binary Search.

Introduction, initializing the graphics, C Graphics functions, programs, Simple 2D Graphics: Text, Lines, Arc, Ellipse, Polygon and Rectangle.

Total: 45 Hours

TEXT BOOK

1. K R Venugopal, S R Prasad “Mastering C” Tata McGraw-Hill Education Pvt Ltd, 2012.

REFERENCE BOOKS

1. Brian W. Kernighan and Dennis M. Ritchie, “The C Programming Language”, 2nd Edition, Pearson Education, 1988.
2. E Balagurusamy “Programming in ANSI C” Sixth Edition Tata McGraw-Hill Education Pvt Ltd, 2012.
3. Mark Allen Weiss, “Data Structures and Algorithm Analysis in C”, 2nd Edition, Pearson Education, 1996.
4. Byron S Gottfried, “Programming with C”, Schaum’s Outlines, Second Edition, Tata McGraw-Hill, 2006.
5. Yashavant P. Kanetkar. “Let Us C”, 14th edition, BPB Publications, 2016.
6. Deitel and Deitel, “C How to Program”, 6th edition, Pearson Education, New Delhi, 2011.

U15FTY207R - FIBRE SCIENCE AND TECHNOLOGY

L	T	P	C	M
3	0	0	3	100

Course Outcomes

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

1. classify textile fibres, define fundamental textile terms and briefly explain concepts related to fibre structure and properties.
2. explain the production of major natural fibres and state their properties and uses.
3. describe the common man-made spinning techniques and explain the production, properties and uses of major natural-polymer fibres.
4. outline the production sequence, properties and uses of typical synthetic and specialty fibres.
5. describe the identification methods of common fibres and explain the common linear density systems for man-made fibres.

UNIT I – GENERAL INTRODUCTION

9

Definitions: Fibre: 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 fabrics.

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

Basic concepts of fibre structure: Definition of orientation, Schematic representations of fibre structure and Properties of poorly-oriented, Moderately-oriented and highly-oriented fibres; definition of crystallinity, Schematic representation of fibre with crystalline and amorphous contents, crystallinity 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 and Moisture regain, Crimp, Fibre uniformity, Lustre, Fibre modulus, Tm and Tg; Essential and desirable properties of a textile fibre; Examples of typical physical, chemical, biological and thermal attributes of textile fibres

Moisture terms: Definitions of absolute humidity, Relative humidity; Standard moisture regain of common fibres.

UNIT II – NATURAL FIBRES

9

Cellulosic fibres

Cotton: Introduction, Properties and uses; Brief study of organic cotton, BT cotton and naturally coloured cotton.

Flax: Introduction, Properties and Uses.

Protein fibres

Silk: Types; Production processes: reeling, throwing, degumming, weighting; silk mark; Properties and uses.

Wool: Classification of wool, grading of wool, production processes, wool mark, Properties and uses.

UNIT III – MAN MADE REGENERATED FIBRES

9

Introduction to man-made fibre spinning

Production sequence, properties and uses of natural-polymer fibres: Viscose rayon, Modal, Lyocell, Bamboo and Acetate.

UNIT IV – SYNTHETIC FIBRES

9

Production sequence, properties and uses of synthetic-polymer fibres: Polyester, Nylon, Acrylic and Polypropylene;

Speciality fibres: Properties and end uses of Elastomeric fibre, Nomex and Kevlar.

UNIT V – LINEAR DENSITY AND IDENTIFICATION OF FIBRES

9

Linear density: Definition, Denier and Tex systems, Decitex, Millitex, Kilotex and English cotton count; Conversion formulae and simple calculations of linear density.

Microfibres: Definition, Advantages and Uses.

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

Total: 45 Hours

TEXT BOOKS

1. Srinivasamoorthy H. V., “Introduction to Textile Fibres”, The Textile Association India, Mumbai, 1993
2. Mishra S.P., “Fibre Science and Technology”, New Age International Publishers, New Delhi, 2000

REFERENCE BOOKS

1. Bernard P. Corbman, “Textiles: Fibre to Fabric”, McGraw Hill International Edition, New Delhi, 1983
2. Mukhopadhyay S.K., “Advances in Fibre Science”, The Textile Institute, UK, 1992
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, 2000

U15PCL208AR - PHYSICS AND CHEMISTRY LABORATORY II

L	T	P	C	M
0	0	2	1	100

Course Outcomes

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

1. apply the principles of optics, electricity and elasticity to determine the engineering properties of materials.
2. evaluate the amount of iron content in the given sample using spectrophotometry, analyze the amount of chloride in a domestic water sample and analyse the quality of brass by estimating copper.
3. determine the resistivity of the given fuse wire used for house hold applications and determine the dissolved oxygen in two different water samples collected from the students residential areas.

LIST OF EXPERIMENTS (PHYSICS PART)

1. Determination of rigidity modulus of the material using torsion pendulum.
2. Determination of specific resistance of a given wire using Carey-Foster's bridge.
3. Determination of Young's modulus of the material by non-uniform bending method.
4. Determination of wavelength of the spectral lines in the mercury spectrum using a spectrometer.
5. Determination of band gap of a semiconductor diode.
6. Determination of coefficient of viscosity of the given liquid using Poiseuille's method.

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

LIST OF EXPERIMENTS (CHEMISTRY PART)

1. Determination of molecular weight of Polyvinyl alcohol using Ostwald Viscometer.
2. Estimation of copper in brass solution by EDTA method.
3. Determination of Calcium Oxide (CaO) in Cement.
4. Estimation of chromium in waste water.
5. Determination of dissolved oxygen in water by Winkler's method.
6. Estimation of Iron content in water by Spectrophotometric method.

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

Total: 30 Hours

U15PSL209R - PROBLEM SOLVING IN C LABORATORY

(Non Circuit Branches : Mech, FT & Civil)

L	T	P	C	M
0	0	2	1	100

Course Outcomes

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

1. write c programs to solve problems using appropriate language features.
2. write programs for sorting list of items and searching an item in a given list.
3. write programs using c graphics features.

Write C programs for the following. The faculty concerned will add the suitable scenario based questions for the concepts and that must be shared during the lab classes. (Compiler/IDE: GCC / Code::Blocks)

1. Functions (includes Pass by value, Pass by reference and recursive functions)
2. Pointer manipulations
3. File Handling in C
4. Command Line Arguments in C.
5. Sorting algorithms - Bubble Sort, Insertion Sort, Selection Sort, Merge Sort and Quick Sort.
6. Linear Search and Binary Search algorithms.
7. Graphics primitives - Line, Arc, Ellipse, Polygon, Rectangle.

Total: 30 Hours

U15FTL210R - FIBRE ANALYTICAL LABORATORY

L	T	P	C	M
0	0	4	2	50

Course Outcomes:

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

1. identify the common textile fibres and determine the blend proportions of binary blends.
2. determine the physical properties, like fibre length, fineness, moisture regain, density of given fibres.
3. examine and discuss the swelling behaviour of cotton and viscose rayon fibres in water and alkaline solution.
4. estimate the spin finish content in synthetic fibres or wax content in cotton.

LIST OF EXPERIMENTS

1. Identification of fibres by microscopy: longitudinal view of fibres
2. Identification of fibres by microscopy: cross-sectional view 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 mixtures
7. Determination of blend proportion in blended yarn / fabric
8. Examination of the diametric swelling behaviour of cotton and viscose rayon fibres in water and alkali solution
9. Determination of the atmospheric conditions in the lab and the amount of moisture in given samples of conditioned and unconditioned fibre
10. Estimation of the crimp of man-made staple fibre and the denier by length and mass measurements

DEMONSTRATION EXPERIMENTS

1. Estimation of spin-finish content in man-made fibre or wax content in cotton by using Soxhlet extraction
2. Floatation principle to identify textile fibres by their density

Total: 45 Hours

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

S. No.	Name of the equipment / software	Quantity Required
1.	Simple and Projection Microscope	3
2.	Electronic Balance (1 mg. accuracy)	1
3.	Hot-Air Oven	1
4.	Soxhlet Apparatus	2
	Total	7

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester III under Regulations 2015R (CBCS)
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	U15MAT301FR	Probability and Statistical Quality Control	3	2	0	4
2	U15GE302R	Basics of Mechanical and Electrical Engineering	3	0	0	3
3	U15CHE304R	Environmental Science and Engineering	3	0	0	3
4	U15FT301R	Technology of Yarn Manufacture	3	0	0	3
5	U15FT302R	Fashion Art and Design	3	0	0	3
6	U15FT303R	Pattern Engineering	3	0	0	3
Practical						
7	U15FT304R	Pattern Making and Grading Laboratory	0	0	4	2
8	U15FT305R	Fashion Illustration Laboratory	0	0	2	1
9	U15GE301R	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 BE FT Students and Staff, COE

COURSE OBJECTIVE

At the end of the course, the students would acquire skills in handling situations involving more than one random variables and functions of random variables, handle various designs of experiments and control charts.

COURSE OUTCOMES

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

1. Explain the concept of random variables and functions of random variables.
2. Describe Probability distributions and solve the real life problems using the same.
3. Discuss the strength, nature and the variability of relationship between two or more variables using correlation and regression techniques.
4. Apply one – way and two – way classification techniques and the various standard designs (CRD, RBD, LSD) for the real – life problems.
5. Analyses various statistical techniques used to find out the status of the process in manufacturing sector.

Unit – I Random Variables**15**

Discrete and continuous random variables, moments, expectation, moment generating function and its properties.

Unit – II Probability and Distributions**15**

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

UNIT - III Correlation and Regression**15**

Correlation (simple and rank correlation) and regression, multiple and partial correlations, partial and multiple regression.

Unit – IV Design of Experiments**15**

Analysis of variance, one way classifications, CRD, two way classification, RBD, Latin square.

Unit – V Statistical Quality Control**15**

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.

Total: 75 hours**TEXT BOOK**

1. “Probability and Statistical Quality Control”, by Sonaversity, 2011.
2. Gupta.S.C. and Kapoor, V.K., “Fundamentals of Mathematical Statistics”, Sultan Chand and Sons, Eleventh Edition, 2002.
3. Veerarajan T., “Probability, Statistics and Random Processes”, Tata Mc.Graw Hill Education, 2008.

REFERENCES

1. Milton. J. S. and Arnold. J.C., "**Introduction to Probability and Statistics**", Tata McGraw Hill, 4th Edition, 2007. (For Units 1 and 2)
2. Johnson. R.A. and Gupta. C.B., "**Miller and Freund's Probability and Statistics for Engineers**", Pearson Education, Asia, 7th Edition, 2007.
3. Walpole. R.E., Myers. R.H., Myers. S.L. and Ye. K., "**Probability and Statistics for Engineers and Scientists**", Pearson Education, Asia , 8th Edition, 2007.
4. Navidi. W., "**Statistics for Engineers and Scientists**", Special Indian Edition, Tata McGraw-Hill Publishing Company Ltd, New Delhi, 2008.
5. Spiegel. M.R., Schiller. J., and Alu Srinivasan. R., "**Schaum's Outlines Probability and Statistics**", Tata McGraw-Hill Publishing Company Ltd. New Delhi, 2007.

COURSE OBJECTIVE

To impart knowledge on fundamental power plant engineering and refrigeration, air conditioning, DC, AC circuits, motors and instrumentation.

COURSE OUTCOMES

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

1. Describe the essential features and working principles of conventional power plants, Refrigerators and Air conditioning systems.
2. State the fundamental laws of electrical circuits and explain the basic principles related to DC and AC electrical circuits
3. Explain the constructional features and principles of operation of DC and AC motors
4. 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; Internal energy; Entropy of vapour.

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 12

DC Circuits: Basic elements and parameters, Ohm's law, Kirchhoff's laws (statement only), series and parallel resistive circuits, star-delta transformation – simple problems.
AC Circuits: AC waveform and standard terminologies, single-phase RLC series circuit – power and power factor – simple problems. Introduction to three-phase system.

Unit IV DC and AC Motors 9

DC motors: Construction and Principle of operation, concept of back EMF, torque equation, types, characteristics. Armature and field speed control of DC shunt motor.
Three Phase Induction Motor: Construction, Working principle, torque equation, torque-slip characteristics, speedtorque characteristics. V/f speed control.

Unit V Measurements and Instrumentation 6

Basic principle of indicating instruments –types – torques – Moving Coil and Moving Iron instruments – dynamometer type wattmeter – induction type energy meter.

Total: 45 hours

TEXT BOOKS :

1. S.R.J.Shantha Kumar, "Basic Mechanical Engineering", 2nd Edition, Hi-Tech Publications, 2000.
2. V.K.Mehta and Rohit Mehta, "Principles of Electrical Engineering and Electronics", S.Chand publishers, 2011.

REFERENCES BOOKS

1. P.K.Nag, "Power Plant Engineering" 3rd Edition, Tata McGraw-Hill Education, 2002. 2.
2. S.K.Bhattacharya, "Basic Electrical and Electronics Engineering", Pearson publishers, 2012. 3.
3. B.L. Theraja, "Fundamentals of Electrical Engineering and Electronics", S. Chand publishers, 2007.

Course Objectives:

L	T	P	C	M
3	0	0	3	100

At the end of a study of the unit concerned, the student should be able to

- State the importance of the acute need for environmental awareness and discuss significant aspects of natural resources like forests, water, mineral, food, energy and land resources.
- Explain the concepts of an ecosystem and provide an overview of biodiversity and its conservation.
- Define the various known kinds of environmental pollution and discuss their causes, effects and control measures **and to describe the safe disposal of hazardous wastes and waste water treatment.**
- **Give an account of the social issues with regard to the environment.**
- **Discuss the impact of human population on the environment.**

UNIT I INTRODUCTION TO ENVIRONMENTAL STUDIES AND NATURAL RESOURCES**12**

Definition, Scope and Importance – Need for public awareness – Forest Resources:- Use and over - exploitation, deforestation, Case Studies, Timber Extraction, Dams, Benefits and their effects on forests and tribal people - Water Resources:- Use and Over-Utilization of Surface and ground water , Floods, Drought, Conflicts Over Water – Mineral Resources:- Use–Environmental Effects of Extracting and Using Mineral Resources – Food Resources: World Food Problems, Changes caused by Agriculture and Overgrazing, Effects of Modern Agriculture, Fertilizer- Pesticide Problems, Water Logging, salinity – Energy Resources:- Growing Energy Needs, Renewable and Non Renewable Energy Sources, Use of Alternate Energy Sources – Land Resources:- Land as a Resource, Land Degradation, Man Induced Landslides, Soil Erosion and Desertification – Role of an Individual in Conservation of Natural Resources.

UNIT II ECOSYSTEMS AND BIODIVERSITY**9**

Concepts of an Ecosystem – Structure and Function of an Ecosystem – Producers, Consumers and Decomposers – Energy Flow in the Ecosystem – Biogeochemical Processes - Ecological Succession – Food Chains, Food Webs and Ecological Pyramids.

Introduction to Biodiversity – Definition: Genetic, Species and Ecosystem Diversity – Value of Biodiversity: Consumptive Use, Productive Use, Social, Ethical, Aesthetic and Option Values – Biodiversity at Global, National and Local Levels – India as a Mega-Diversity Nation – Hot-Spots of Biodiversity – 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**10**

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 (G) Nuclear Hazards – Solid Waste Management:- Causes, Effects and Control Measures of Urban and Industrial Wastes, hazardous wastes and biomedical wastes – Role of an Individual in Prevention of Pollution – Pollution Case Studies – disaster Management:- Floods, Earthquake, Cyclone and Landslides, Waste water treatment methods, Green chemistry – principles and applications

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT**8**

Sustainable Development – Urban Problems Related To energy – Water conservation, Rain Water Harvesting, Watershed Management – Resettlement and Rehabilitation of People, its Problems and Concerns – Environmental Ethics:- Issues and Possible Solutions – **Climate Change, Global Warming, Acid Rain, Ozone**

Layer Depletion, Nuclear Accidents and Holocaust, Case Studies – Wasteland Reclamation – Environment Production Act – Air (Prevention and Control of Pollution) Act – Water (Prevention and Control of Pollution) Act – Wildlife Protection Act – Forest Conservation Act – Issues Involved in enforcement of Environmental Legislation – Public Awareness.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT

6

Population Growth, Variation Among Nations – Population Explosion – Family Welfare Programme – environment and Human Health – Human Rights – Value Education – HIV /AIDS – Women and Child Welfare – Role of Information Technology in Environment and Human Health – Case Studies.

TOTAL : 45 PERIODS

Text Books:

3. AnubhaKaushik and Kaushik, “Environmental Science and Engineering” New Age International Publication, 4th Multicolour Edition, New Delhi, 2014.

Reference Books:

9. S. Radjarejesri et al., “Environmental Science” Sonaversity, Sona College of Technology, Salem, 2018.
10. Masters, G.M., “Introduction to Environmental Engineering and Science”, Pearson Education Pvt., Ltd., 2nd Edition, 2004.
11. Miller, T.G. Jr., “Environmental Science”, Wadsworth Pub. Co.
12. Erach, B., “The Biodiversity of India”, Mapin Publishing P.Ltd., Ahmedabad, India.
13. ErachBharucha, “Textbook of Environmental Studies for Undergraduate Courses”, 2005, University Grands Commission, Universities Press India Private Limited, Hyderguda, Hyderabad – 500029.

COURSE OBJECTIVE

To impart knowledge on objectives and principle of various processes and machineries involved in textile yarn manufacture like Ginning, Blow room, Carding, Drawing, Combing, Roving, Spinning, Doubling and details of Sewing thread and its manufacture, Fancy yarns, Special yarns and their applications.

COURSE OUTCOMES

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

1. Describe the ginning, mixing and blending processes and also the machinery involved in blow room process.
2. State the objectives and explain the working of modern carding and draw frame processes.
3. List and explain the objectives, material passage and working of combing and roving processes.
4. State the objectives and describe the working of Ring spinning and doubling process and also to explain briefly about the Compact spinning and Rotor spinning.
5. Discuss the quality requirements and fibres used in the sewing thread manufacture, types and production process of sewing thread and briefly explain about fancy yarns and other special yarns for their types and end uses.

Unit-I Ginning, Opening and Cleaning**9**

Ginning: Introduction, Objectives of ginning, Types of gins, Outline of the principle of knife roller gin.

Mixing and Blending: Purpose of mixing and blending, Difference between mixing and blending.

Blow Room: Objectives, Construction and working of mixing bale opener, step-cleaner, multi-mixer; Brief study of scutcher, chute feed system. Modern blow room lines for processing cotton, man-made fibres and their blends.

Unit-II Carding and Drawing**9**

Carding: Objectives of carding, Outline of the working of a modern high-production card.

Drawing: Objects of draw frame, Basic principles of doubling and drafting, Description and outline of the working of a modern draw frame, Pre-comber and post-comber drawing processes.

Unit-III Combing and Roving**9****Combing:**

Differentiation between carded and combed yarns, Brief study of comber lap preparation methods, Objectives of combing, Outline of the working of a modern comber

Roving: Objects of fly frame, Brief study of drafting system, Outline of the working of a modern speed frame, Concept of flyer lead and bobbin lead in fly frames.

Unit-IV Spinning and Doubling**9**

Ring Spinning: Objects of ring frame, Outline of the working of a modern ring frame, Speed and production particulars.

Modern spinning systems: Principle of yarn formation - Compact spinning, Rotor spinning. Properties and end uses of these yarns.

Doubling: Purpose of doubling, Outline of the working of Two-for-one twister, End uses of doubled yarn.

Unit V Sewing Thread and Fancy Yarns**9**

Sewing thread: Quality requirements, Fibres used in the manufacture, Types of sewing threads, Important properties, Production process, Selection of sewing thread, Ticket number, Leading brands of sewing threads.

Fancy yarn: Definition, Brief study of Slub yarn, melange yarn, Snarl yarn, Spotted yarn. End uses of fancy yarn.

Other special yarns: Brief study of Core-spun yarn, metallic yarn, Hollow yarn, applications of these yarns.

Total: 45 hours

TEXT BOOK

1. Lord P. R., “**Hand book of Yarn Production: Technology, Science and Economics**”, The Textile Institute, Manchester, U.K., 2003.

REFERENCES

1. Klein W., "**A Practical Guide to Opening and Carding**", Vol. 2, The Textile Institute, Manchester, 1987.
2. Klein W., "**A Practical Guide to Combing and Drawing**", Vol. 3, The Textile Institute, Manchester, 1987.
3. Klein W., "**A Practical Guide to Ring Spinning**", Vol. 4, The Textile Institute, Manchester, 1987.
4. Klein W., "**New Spinning Systems**", Vol. 5, The Textile Institute, Manchester, 1993
5. Klein W., "**Man Made Fibres and their Processing**", Vol. 6, The Textile Institute, Manchester, 1994.
6. Chattopadhyay R. (Ed), “**Advances in Technology of Yarn Production**”, NCUTE, IIT Delhi, 2002.
7. Gowda R.V.M., "**New Spinning Systems**", NCUTE, IIT Delhi, 2003.

COURSE OBJECTIVE

To enable students to define and discuss the terms related to fashion, art and design, the classification, types and life cycles of fashion, to grasp the colour theory and the portfolio presentation.

COURSE OUTCOMES

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

1. Define and discuss the fashion, art and design related terms and the classification
2. Describe different types of fashion and life cycles of fashion.
3. Explain 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. Bounce out the theme and development of portfolio.

UNIT-I Introduction to Fashion Art Design**9**

Definition of Fashion, Art, Design, Costume and Clothing; Origin and history of Fashion, Art, Design, Clothing and costumes. Importance of Clothing, Types of clothing, Factors to be considered in the selection of clothing; Evolution of dress from painting, Cutting, Sculpture and wood carvings.

UNIT -II Classification and Types of Fashion**9**

Basics of Nature of Fashion, Environment of Fashion, Movements on Fashion, Business of Fashion, Theories of Fashion, Fashion trends, Chic, Boutique, Haute Couture.

Study of leading Fashion Designers: French, Italian, American, Indian and English; Role of Fashion Designers.

UNIT-III Elements and Principles of Design**9**

Elements of design: Introduction on basic Elements of design ---Line, Size, Shape, Texture, form, Colour and light - effects of elements in the apparel.

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

UNIT 4 Colour**9**

Colour: Colour Theories- primary, secondary, tertiary, intermediate colors - color scheme - dimensions of colors - warm and cool colors, Tint and Shades, Psychology of colors, Application of colors to different components and in different seasons, Color combinations, color contrast, color harmony.

UNIT 5 Design and Development**9**

Design and development: Designer boards - Mood board, fabric board, colour board, accessory board. Fashion illustration – illustration techniques – strokes, Hatching, shading; Colouring techniques – Medias for colouring. Portfolio presentation – communication, practicalities and style of presentation.

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 BOOKS

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. Harold Carr, “Fashion Design and Product Development” John Wiley and Sons Inc. New York, 1992.

COURSE OBJECTIVE

To impart knowledge on work room terms and practices, measurements, Block preparation, Dart manipulation and drafting method for various components and garments, Draping and grading.

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 dart manipulation techniques
3. Describe the pattern drafting for sleeves, collars, yokes and cuffs
4. Draft block patterns for basic men's and women's garments
5. Explain the basic principles of grading and draping

Unit -I Measurements and Workroom Practices 9**Flow chart of garment manufacturing**

Pattern: Definition, Importance, Types: basic pattern, working pattern and production pattern; **Pattern making:** Definition, Techniques: drafting and draping; Pattern making tools and workroom terms and definitions. 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 and measuring the form.

Unit -II Block preparation and Dart manipulation 9**Drafting of basic bodice, Skirt blocks and sleeve**

Dart manipulation: Pivotal method, Slash and spread method, Designing with darts, Tucks, Pleats, Flares, Gathers and Style lines, ease allowances, influence of allowances on garment fit.

Unit -III Sleeves and Collars 9

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

Collars: Convertible, Shirt, Mandarin, Peter pan, Cape, Square, Scalloped, Sailor, Puritan, Shawl, and Notch collar.

Cuff: Shirt cuff, French cuff and Contoured cuff.

Yokes: Preparing patterns for yokes: Partial, Yoke without fullness, Yoke with fullness and Yoke supporting or releasing fullness.

Unit -IV Drafting for Garments 10

Drafting: Basic principles and methodologies used to draft block patterns for the following garments: Shirt, Trouser, Skirt, Blouse and Nightwear.

Pattern alterations: Importance, Principles and pattern alterations for blouse and trouser.

Computer applications in pattern making: Fundamentals of pattern making, grading and marker planning using CAD.

Unit -V Grading and Draping 8

Grading: Principles of pattern grading, Types: Draft grading: Two dimensional and Three dimensional grading, Track grading; Grading of basic back, Basic front, Basic sleeve and Basic collar.

Draping: Introduction, Importance, Preparation of dress forms, Preparation of muslin for draping; Draping for bodice, sleeve and skirt, Advantages and disadvantages.

Total: 45 hours

TEXT BOOKS

1. Halen Josep Armstrong “Pattern Making for Fashion Design” 5 th Edition, Pretence Hall, New Jercey , 2014.
2. 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**”, Om Book Service, 1997.
3. Gerry Cooklin, “**Master Patterns and Grading for Women’s Outsize**”, Blackwell Scientific Publications,1995.
4. Gerry Cooklin, “**Master Patterns and Grading for Men’s Outsize**”, Blackwell Science Publications, 1992.
5. Helen Joseph Armstrong, “**Draping for Apparel Design**” , Fairchild Publications, Newyork, 2000.

COURSE OBJECTIVE

To impart practical knowledge on drafting and grading method for various components and garments

COURSE OUTCOMES

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

1. Develop basic blocks
2. Explain and draft pattern for various components
3. Draft the patterns for various garments
4. Display awareness of grading methods for various garments

List of Experiments**I. Drafting of bodice blocks, Skirt blocks and sleeve block (2 sessions)****II. Develop the pattern for the following components**

1. **Sleeves:** Set-in-sleeves: Plain, Puff, Bell, Bishop, Circular and Leg-o-mutton; Sleeves combined with bodice: Kimono, Dolman and Raglan (1 session)
2. **Collars:** Convertible, Shirt, Mandarin, Peter pan, Cape, Square, Scalloped, Sailor, Puritan, Shawl and Notch collar (1 session)
3. **Cuff:** Shirt cuff, French cuff and Contoured cuff (1 session)
4. **Necklines** (1 session)
5. **Yokes:** Plain yoke (1 session)

III. Develop the pattern and grade for the following garments

1. Baby frock (1 session)
2. Blouse (1 session)
3. Skirt and Top (1 session)
4. Men's Formal Shirt (1 session)
5. Men's Formal Trouser (1 session)

Total: 60 hours

Pattern Making and Grading Lab
List of equipment required for a batch of 30- students for U.G

. 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	
Total		36	

COURSE OBJECTIVE

To enable students to sketch the various elements and principles of designing, Draw fashion figures and visually communicate apparel design details, colour theory and various colour schemes, Illustrate different styles of garment components and reproduce it to fit fashion figures

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
2. Sketch the various elements and principles of designing
3. Examine the human anatomy, draw fashion figures and visually communicate apparel design details
4. Demonstrate an understanding of the colour theory using various colour schemes
5. Illustrate different styles of garment components and reproduce it to fit fashion figures

LIST OF EXPERIMENTS

1. Illustration of lines and strokes using pencil shading techniques; lettering and numbering styles
2. Illustration of elements of design
3. Illustration of principles of design
4. Illustration of human anatomy
5. Illustration of different postures of human head, hand, leg and feet
6. Illustration of different hair styles
7. Sketching of lay figure using head theory
8. Preparation of Prang's colour wheel
9. Preparation of different colour schemes
10. Rendering different fabric textures
11. Illustration of sleeves, cuffs, and necklines
12. Illustration of skirts, pockets, trousers, and skirt tops

Total: 30 hours

Semester-III	U15GE301R:SOFT SKILLS AND APTITUDE – I	L	T	P	C	Marks
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 than those in BA-I and II in stated areas of quantitative aptitude and logical reasoning						
3. Demonstrate higher than BA-I and II 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: 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: a. Numbers: Finding units digit, Power rule b. Base system – Progressions: Arithmetic, geometric and harmonic c. HCF and LCM d. Averages e. Percentages f. Ratio and proportion g. Ages h. Partnership i. Profit and loss j. Mensuration: Area, perimeter, volume and Surface area k. Coding and Decoding: Numbers, alphabet, alphanumeric coding and Artificial language l. Direction Sense m. Symbols and series: Numbers, alphabet, symbols, pictures and alphanumeric n. Seating arrangement					
3. Verbal Aptitude	Demonstrating English language skills with reference to the following topics: a. Verbal analogy b. Tenses c. Prepositions d. Reading comprehension e. Choosing correct / incorrect sentences f. Describing pictures					

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester IV under Regulations 2015R (CBCS)
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	U15FT401R	History of Costumes and Accessories Designing	3	0	2	4
2	U15FT402R	Woven Fabric Manufacture and Structure	3	0	0	3
3	U15FT403R	Knitted Fabric Manufacture and Structure	3	0	0	3
4	U15FT404R	Chemical Processing of Textiles and Garments	3	0	2	4
5	U15FT405R	Garment Construction-I	3	0	0	3
Practical						
6	U15FT406R	Fabric Structure and Textile CAD Laboratory	0	0	2	1
7	U15FT407R	Garment Construction Laboratory - I	0	0	4	2
8	U15ENG401R	Communication Skills Laboratory	0	0	2	1
9	U15FT408R	In-Plant Training	0	0	0	1
10	U15GE401R	Soft Skills and Aptitude - II	0	0	2	1
Total Credits						23

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, Fourth Semester BE FT Students and Staff, COE

COURSE OBJECTIVE

To impart knowledge on traditional textiles of India, various styles of costumes prevailing in the ancient civilization and the aesthetic, functional purpose of commonly used garment, leather and ornamental accessories.

COURSE OUTCOMES

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

1. Describe different types of traditional textiles of India
2. Give an account of the various concepts of fashion designing and the prevailing styles in the costumes of ancient civilizations and overview of costumes of different countries in the world.
3. Explain the aesthetic and functional purpose of commonly used garment accessories
4. Discuss key factors in the design of typical leather accessories with regards to their functional and aesthetic requirements
5. Explain the key factors in the design of typical ornamental fashion accessories with regards to their functional and aesthetic requirements.
6. Create fashion and garment accessories using various material

Unit-I Traditional Textiles of India**11**

History of embroidery, Hand-woven, Dyed, Printed and painted textiles of India;

Coloured Textiles – Bandhani, Patola, Ikkat, Pochampalli.

Woven Textiles – Brocades, Jamavar, Paithani, Jamdani, Chanderi, Maheshwari, Kanjivaram, Kota, Baluchari, Dacca Muslin, Himrus and Amrus;

Printed Textiles – Chintz, Sanganeri;

Painted Textiles – Kalamkari; Shawls of Kashmir.

Unit-II Costumes of Ancient Civilization**10**

History of Indian costumes – Mughal and post - Mughal periods; Traditional costumes of different states of India; Costumes of ancient civilizations - Egypt, in Greek, Roman, English, **American**, French empires during Renaissance 1500 –1600 AD – Overview of Costumes of Pakistan, SriLanka, Burma, China, and Africa.

Unit-III Garment Accessories**8**

: Introduction to fashion accessories – Classification of various accessories; Selection of Materials, Design, Functional and aesthetic performance and their advantages - Ribbons, Braids, Laces, Appliqués, Buttons, Zippers, Snap fasteners, Hooks and Eyes, Hook and Loop tape; Eyelets, Neck Tie, Scarves, Stoles, Umbrella, Socks, Stockings, Veils.

Unit-IV Leather Accessories**8**

Selection of Materials, Design, Functional and aesthetic performance and their advantages; Various styles of – Footwear, Belts, Gloves, Hand bags, Hats, Wallets, and other personal leather goods.

Unit-V Ornamental Accessories**8**

Selection of Materials, Design, purpose, styles and their advantages; Pendants, Waist Bands, Wrist Bands, Necklaces, Head Bands, Bows, Sunglass, Wrist watches, Rings, Ear rings, Bangles, Bracelets and Anklets.

LIST OF EXERCISES

- 1. Designing and production of Earrings, bracelets, necklaces, rings and anklet** using materials like colored papers, buttons, fabric scraps, coloured beads and stones (1 session)
- 2. Designing and Construction of handbag, purse and glove** (2 sessions)
- 3. Designing and Construction of headband, wrist band, cap and Belt** (1 session)
- 4. Designing and Construction of garment accessories using Ribbons, Braids, Laces, Appliques** (1 session)

Total: 75 hours

TEXTBOOKS

1. Phyllis Tortora, “**Encyclopedia of Fashion Accessories**”, Om Books Publication, 2003.
2. Russel Gillow, Nicholas Barnard, “**Traditional Indian Textiles**”, Thames and Hudson Ltd., London, 1991.

REFERENCE BOOKS

1. Ritu Bhargava, “**Design Ideas and Accessories**” Jain Publications Pvt. Ltd., 2005.
2. Vandana Bhandari, “**Costume, Textiles and Jewellery of India – Traditions in Rajasthan**”, Prakash Books, New Delhi, 2004.
3. John Peacock, “**Fashion Accessories – The Complete 20th Century Source Book**”, Thames and Hudson Publication, 2000.

COURSE OBJECTIVE

To impart knowledge on various weaving preparatory processes, working principle of shedding, picking and beat-up motions of shuttle and shuttle less loom and basic woven fabric structures.

COURSE OUTCOMES

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

1. Explain the winding, warping and sizing process
2. Describe the working principles of various shedding mechanism
3. Explain the various principles of weft insertion in shuttle and shuttle less looms
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 and jacquard fabrics

Unit I Weaving Preparation 9

Winding: Principle of cone winding machines; yarn clearers; Principle of pirn winding machine; Type of beam warping and sectional warping machines; Sizing: Objects of sizing and size ingredients.

Unit II Basics of loom mechanism -I 9

Looms – types of looms, basic motions; Primary, secondary and auxiliary motions. Principles of Dobby and Jacquard.

Unit III Basics of loom mechanism –II 9

Principles of Beat-up mechanisms, Principle of take-up and let-off motions.

Shuttle and shuttle less weaving machines, Principles of weft insertion by shuttle, projectile, jet and rapier; multi-phase weaving systems.

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, matt rib and huck-a-back; Twill weave and its derivatives: ordinary twill, herringbone twill and zigzag twill, Satin, Sateen and their derivatives, Honeycomb, Ordinary and Brighton honeycomb, Crepe weave and its modifications. Fabric structures and its commercial name.

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 with single colour; Extra-warp and extra-weft figuring with two colours;

Mock leno: Perforated mock leno, Warp way distorted mock leno, Weft way distorted mock leno

Total: 45 hours

TEXT BOOKS

1. Lord P. R. and Mohammed M. H., “**Weaving: Conversion of Yarn to Fabric**”, Merrow Publishing Co. Ltd., UK, 1998
2. Talukdar M. K., Sriramulu P. K. and Ajgaonkar D. B., “**Weaving: Machines, Mechanisms, Management**”, Mahajan Publishers Pvt Ltd, 2004
3. Gokarneshan N., “**Fabric Structure and Design**”, New Age International (P) Limited, 2009

REFERENCES

1. Spencer D.J., "**Knitting Technology**", Pergamon Press Oxford, 1982
2. Paling D.F., "**Warp Knitting Technology**", Columbine Press Baxton, 1975
3. W.S. Murphy, "**Handbook of Weaving**", Abhishek Publicati
4. H. Nisbet, "**Grammar of Textile Design**", Taraporewala and Sons Co. Pvt. Ltd., 1994
5. W.S. Murphy, "**Textile Weaving and Design**", Abhishek Publications, 2000

COURSE OBJECTIVE

The course aims to help the students to understand the basics of the knitting industry, warp and weft knitted structures, concept, analyze a knitting fabric and make its knitting, relationships between knit fabric structures and the technology and non woven fabric manufacture and applications

COURSE OUTCOMES

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

1. Describe the basic terms, specifications and functions of warp and weft knitting machines
2. Develop a clear understanding of different stitches and pattern mechanisms used for the production of weft knitted fabrics
3. Identify the different structures of the basic weft knitted structures and its derivatives
4. Identify and explain the representation of warp knitted fabrics
5. Discuss the methods of production and the applications of common types of nonwoven fabrics.

UNIT I Introduction**9**

Weft Knitting: Classification, Functional Elements: Needles, Loop forming sequence, Sinkers, Cylinder, Dial, Cams, Creels, Feeder, Fabric Spreader, Take down and winding Mechanism. Machine description - Single Jersey, Rib, Purl and Interlock machine.

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.

UNIT II Basic Stitches, Basic weft Knitted Structures and Pattern Mechanism**9**

Knit stitch, float stitch, tucks stitch: Properties, Symbolic and diagrammatic representation of stitches.

Basic Weft Knitted Structures: Single Jersey, Rib, Purl and Interlock. Line, Symbolic and diagrammatic notations of basic weft knitted structures, Properties.

Patterning mechanism: Pattern wheel, Pattern drum, Peg drum machine, Punched steel tape, Punched paper roll jacquard, Electronic devices for needle selection.

UNIT III Derivatives of Plain Jersey, Rib and Interlock Structures**9**

Derivatives of plain knit: Lacoste, cross tuck, satin, Knitted twill, Jersey blister, Plaiting, seer sucker effect, accordion fabrics.

Derivatives of Rib knit: 2x2 Rib, 3x2 Rib, 5x1 Derby rib, Half cardigan, Full cardigan.

Derivatives of Purl knit: 2x2 Purl, 4x2 Purl, Basket Purl

Derivatives of Interlock Structure: Eight lock, Ponte-di-roma, Texi-pique, Milano rib

Striped patterns: Horizontal stripe patterns, Vertical stripe patterns, Square patterns.

Fabric structure and its commercial name.

UNIT IV Warp Knitted Structures**9**

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.

Unit V Non-Woven Fabric**9**

Process sequence in manufacturing of non woven fabrics; Method of non-woven fabric manufacture: Mechanical bonded, Chemical bonded, Thermal bonded, Spun bonded and Melt blown. Applications of non-woven fabrics.

TOTAL: 45 hours

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 OBJECTIVE

To enable students, understand and explain the process of scouring, bleaching and dyeing of cotton and polyester fabrics with various dyes using different dyeing machines; printing of cotton with different styles.

COURSE OUTCOMES

At the end of the study of this course the students will 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
6. Perform lab scale bleaching, dyeing and printing of given textile materials.
7. Assess the colour fastness of dyed textiles and determine the shrinkage of woven and knitted fabrics

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.

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

UNIT –V Fabric finishes, Dyeing and Printing Quality Evaluation**9**

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.

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 (2 sessions)
4. Screen printing of cotton fabric (1 session)
5. Determination of colour fastness to washing and rubbing (2 sessions)
6. Determination of shrinkage for woven and knitted fabrics (1 session)

Total: 75 hours

TEXTBOOK

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. Dr. C. N. Sivaramakrishnan, “**A compilation of 10 papers**”, Colorage
5. L. W. C Wiles, “**Textile Printing**” (Merrow Monographs. Textile Technology

COURSE OBJECTIVE

To impart knowledge on various types of seams, seam finishes, stitches, sewing threads, the method of construction of different types of sleeves, collars, yokes, fullness, hem, necklines, pockets, plackets, waist bands, cuffs and the techniques involved in the fastening of garment closures.

COURSE OUTCOMES

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

1. Explain the various types of seams, seam finishes, stitches and sewing threads
2. Discuss the method of construction of different types of sleeves and collars
3. Explain the steps in the construction of yokes, fullness, hem, necklines and hems
4. Describe stitching methods used for pockets, plackets, waist bands and cuffs
5. Explain the techniques involved in the construction of garment closures

Unit I 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 II Sleeves and Collars 9

Sleeves: Types of sleeves, Construction procedure of Plain, Puffs, Gathered, Bell, Bishop, Circular, Leg-o-mutton, Magyar, Dolman and Kimono sleeve.

Collars: Classification –Construction procedure of Cape, Peter pan, Puritan, Sailor, Square, Rippled, Scalloped, Mandarin, Shirt, Shawl and Notch collar.

Unit III Yokes and fullness 9

Yokes: Definition – Selection of yoke design, Different styles of yoke. Simple yoke – yokes with or without fullness – Midriff yokes, Methods of attaching yokes.

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.

Hemming Techniques: Definition, Factors to be considered in the selection of hems, Types of machine stitched hem, Hand stitched hem.

Neckline Finishes: Preparation and uses of True Bias, Facings, and Binding.

Unit IV Pockets and Plackets 9

Plackets: Types, two piece plackets, continuous plackets, Kurtha plackets, Shirt cuff placket

Pockets: Types – patch pocket, patch with lining, Patch with flap, Front hip, Set-in seam, Slash pocket - Single lip, Double lip, with flap.

Waistband: One-piece, Two-piece and Tailor waistband, Elastic applied **Cuffs:** Types, square shape, Round shape.

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. 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**”, Blackwell Science Ltd., 1997.
3. Laing, Webster J “**Stitches and Seams**” Woodhead Publishing Ltd., 1998.
4. Leila Aitken, “**Step by Step Dress Making Course**”, BBC Books, 1992.

COURSE OBJECTIVE

To develop the design, draft and peg plan for the common woven fabrics with their constructional parameters and to develop 2D simulations of different textile design using various tools of textile CAD software.

COURSE OUTCOMES

At the end of the study of this 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.(1 session)
2. Mock-leno and Honey comb.(1 session)
3. Dobby cloth analysis. (1 session)
4. Jacquard cloth and Terry towels. (1 session)
5. Extra warp and extra weft figuring. (2 sessions)

Analyse the structures of knitted fabric Designs

1. Single jersey, rib and interlock (2 sessions)

Study and practice of

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

TOTAL: 30 hours

Textile CAD and Fabric Structure Laboratory
List of equipment required for a batch of 30 students for U.G

S. No.	Name of the equipment / software	Quantity Required
1.	Module (Software)	
	Designing Dobby Design	15
	Designing Jacquard Design	15
	Designing Print design	15
2.	Hard Ware	
3.	Pentium III / higher PCs Configuration to Support the Software	30
4.	Printer	1
5.	Scanner	1
6.	GSM Cutter and Scale	2
7.	Beesley Balance	4
8.	Course length tester	1
9.	Counting Glass	30
10.	Electronic Balance	1
	Total	115

COURSE OBJECTIVE

To train students to construct different types of seams, seam finishes, darts, tucks, pleats, plackets, neckline finishes, pockets and sleeves to acceptable quality levels.

COURSE OUTCOMES

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

1. Construct different types of seams, seam finishes, darts, tucks and pleats to acceptable quality levels
2. Stitch different types of plackets to acceptable quality levels
3. Construct different neckline finishes such as bias binding, facing and collars to acceptable quality levels
4. Stitch various types of pockets and sleeves to acceptable quality levels
5. Explain the method of taking measurements for children's garments and describe the process involved in pattern making and the construction of children's wear.

List of Experiments

1. Preparing samples of Basic seams, Seam finishes, Darts, Tucks and Pleats (2 sessions)
2. Preparing samples of plackets – Continuous bound placket, 2 piece placket and Tailors Placket (1session)
3. Preparing samples of necklines – Bias facing, Shaped facing and Bias binding (1session)
4. Preparing samples of collars – Peter Pan collar, Mandarin collar and Shirt collar. (2 sessions)
5. Preparing samples of pockets –Patch pocket, set in seam pocket and Bound pocket (2 sessions)
6. Preparing samples of Sleeves –Plain sleeve, Bell sleeve, puff sleeve, Raglan sleeve and Kimono sleeve(1session)
7. Develop the pattern and construct children's body/sleep suit(1session)
8. Develop the pattern and construct children's rompers(1session)
9. Develop the pattern and construct children's frock(1session)

Total: 60 hours

Garment Construction Laboratory - I
List of equipment required for a batch of 30 students for U.G

S. No.	Name of the equipment / software	Quantity Required
1.	Single-needle lock-stitch machine	30
2.	Steam Iron	3
3.	Fusing Machine	1
Total		34

(Common to all branches of Third / Fourth Semester B.E / B.Tech programmes)

COURSE OBJECTIVE

To impart knowledge and practice on communication of listening, reading and speaking skill

COURSE OUTCOME

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

1. Communicate confidently and effectively
2. Demonstrate active listening skills
3. Practice soft skills and interpersonal skills to excel in their jobs.
4. Use language efficiently to face interviews, participate in group discussions and present speeches.

1. **Listening Comprehension:** Listening and typing – listening and sequencing of sentences – Filling in the blanks – Listening and answering questions.

2. **Reading Comprehension:** Filling in the blanks – Cloze exercises – Vocabulary building – Reading and answering questions.

3. **Speaking: Phonetics:** Intonation – Ear training – Correct Pronunciation – Sound recognition exercises – Common errors in English.

Conversations: Face to Face Conversation – Telephone conversation – Role play activities (Students take on roles and engage in conversation)

4. **Making presentations:** introducing oneself – introducing a topic – answering questions – individual presentation practice

5. Creating effective PPTs – presenting the visuals effectively

6. Using appropriate body language in professional contexts – gestures, facial expressions, etc.

7. Preparing job applications - writing covering letter and résumé

8. Applying for jobs online - email etiquette

9. Participating in group discussions – understanding group dynamics - brainstorming the topic – mock GD

10. Training in soft skills - persuasive skills – people skills - questioning and clarifying skills

11. **Writing Project proposals:** collecting, analyzing and interpreting data / drafting the final report

12. Attending job interviews – answering questions confidently

13. Interview etiquette – dress code – body language – mock interview

Total: 30 hours

REFERENCE BOOKS:

1. Dhanavel, S.P. 2010. **English and Soft Skills**. Hyderabad: Orient BlackSwan Ltd.

2. Corneilssen, Joep. **How to Prepare for Group Discussion and Interview**. New Delhi: Tata-McGraw-Hill, 2009.

3. D'Abreo, Desmond A. **Group Discussion and Team Building**. Mumbai: **Better Yourself Books**, 2004.

4. Ramesh, Gopalswamy, and Mahadevan Ramesh. **The ACE of Soft Skills**. New Delhi: Pearson, 2010.

5. Gulati, Sarvesh. **Corporate Soft Skills**. New Delhi: Rupa and Co. 2006.

6. Van Emden, Joan, and Lucinda Becker. **Presentation Skills for Students**. New York: Palgrave Macmillan, 2004.

7. Turton, N.D and Heaton, J.B. **Dictionary of Common Errors**, Addison Wesley Longman Ltd., Indian reprint 1998.

EXTENSIVE READING

1. Covey, Stephen R. **The 7 Habits of Highly Effective People**. New York: Free Press, 1989.

2. Bagchi, Subroto. **The Professional**. New Delhi: Penguin Books India, 2009.

COURSE OBJECTIVES

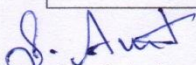
To provide exposure to the real world of garment manufacturing system.

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
 2. 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.
 - The students have to submit a report of their in-plant training.
 - 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	U15 GE 401R: 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: <ol style="list-style-type: none"> SWOT Goal setting Time management Stress management Interpersonal skills and Intrapersonal skills Presentation skills Group discussions 					
2. Quantitative Aptitude and Logical Reasoning	Solving problems with reference to the following topics: <ol style="list-style-type: none"> Allegation and mixture Time, speed and distance: Unit conversion, Average speed, Relative speed, two objects crossing each other in the same direction and opposite direction, Boats and streams, Races and games Clocks Calendars Blood relations Cubes and Dices Syllogism (≤ 3 statements) Ranking and order Company specific aptitude questions 					
3. Verbal Aptitude	Demonstrating English language skills with reference to the following topics: <ol style="list-style-type: none"> Critical reasoning Theme detection Verbal analogy Prepositions Articles Cloze test Company specific aptitude questions 					


Dr.S.Anita

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

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester V under Regulations 2015R (CBCS)
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	U15FT501R	Garment Construction-II	3	0	0	3
2	U15FT502R	Garment Production Machinery and Equipment	3	0	0	3
3	U15FT503R	Apparel Production Planning and Control	3	0	0	3
4	U15FT504R	Clothing Size, Fit and Comfort	3	0	0	3
5	U15FT901R	Elective - Computer Applications in the Garment Industry	3	0	0	3
	U15FT904R	Elective - Visual Merchandising				
Practical						
6	U15FT505R	Garment Construction Laboratory - II	0	0	4	2
7	U15FT506R	Apparel Machinery Laboratory	0	0	2	1
8	U15FT507R	In-Plant Training	0	0	0	1
9	U15GE501R	Soft Skills and Aptitude -III	0	0	2	1
Total Credits						20

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

COURSE OBJECTIVE

To impart knowledge on measurement for children's, men's and women's garment, draft the pattern and construct the children's, men's and women's garment and check the fit of the garment, drafting and construction of lingerie and the importance and application of elastomeric yarns.

COURSE OUTCOMES

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 minimizing the fabric used and check the fit of the garment.
3. Describe the method of drafting and construction of men's suit and explain the principles of fit, explain the method to judge the fit of the men's suit'.
4. Mention the importance and method of taking measurement for women's garment, state the procedure of pattern drafting and construction of women's wear and explain the process involved in minimizing fabric consumption for women's wear.
5. Describe intimate apparels and 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.

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.

Lingerie: Intimate apparels, different types of fitting for ladies inner wear, step by step procedure of construction, 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 OBJECTIVE

To impart knowledge to the students about the spreading techniques with different forms of fabrics, cutting machines, parts and setting points of sewing machine and specialised industrial sewing machine

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.

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.

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. Latest developments in sewing machines. Sewing machine maintenance, maintenance schedule for various machines.

Total: 45 hours

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**", The Textile Institute, Manchester, UK, 2009.

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.

COURSE OBJECTIVE

To impart knowledge about the production, pre-production activities, marker, lay planning, bundle ticket, operation sequence, production planning and control, and the assessment of the quality of the developed products.

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. Discuss the different types of production system and operation break down for various garments.
4. Explain the capacity calculation and line balancing in cutting, sewing and finishing.
5. Discuss the production planning tools and its implementation in garment industry.

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**

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

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

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.

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.

COURSE OBJECTIVE

To impart knowledge about human anthropometrics and size systems, method of evaluation of clothing fit and clothing appearance, principle of 3D body scanning, virtual garmenting and various men's and women's garment fitting solutions.

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.

UNIT I Human Anthropometrics and Sizing Systems 8

Basics of sizing systems: Definition, traditional anthropometry, development of sizing system, international sizing, principles of sizing system, size categories in menswear, women's wear and children's wear.

UNIT II Evaluation of Clothing Fit 10

Subjective Evaluation of Clothing Fit: Definition of fit, importance of fit, standards of fit, influence of clothing fit, testing methods for dimensional fit, subjective rating scales and subjective fitting guide.

Objective Evaluation of Clothing Fit: Fit formula, algebraic evaluation of clothing fit, pressure evaluation of clothing fit.

UNIT- III 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 Tailorability, Fabric properties related to tailoring performance.

UNIT IV Physiological and Fitting Comfort 9

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 clothing appearance and fit.

UNIT V Thermal Comfort 9

Physical phenomena affecting thermal comfort, Effect of fabric properties of heat transfer, Moisture vapour permeability, Liquid moisture permeability – absorbency, wettability, waterproof, contact angle, moisture management, Air permeability – factors influencing 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 Alagiruamy .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.

REFERENCES

1. Sandra Betzina, “**Fast Fit-Easy Pattern Alterations for Every Figure**”, The Taunton Press Inc., Singapore, 2003.

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 OBJECTIVE

To impart knowledge on method of taking measurements for children's, men's casual, men's formal and men's underwear garments and the process of pattern making and the construction of children's, men's casual, men's formal and men's underwear garments wear.

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 children's garments and describe the process involved in pattern making and the construction of children's wear.
2. State the importance of measurement taking for men's wear and demonstrate the process of pattern drafting and construction of men's casual and inner garments.
3. Explain the method of taking measurements for women's casual wear and state the drafting procedure and the steps involved in the construction of women's casual wear.

Construction of**Children's wear:**

1. Children's body/sleep suit (1session)
2. Children's rompers (1session)
3. Children's frock (1session)

Men's casual wear:

4. Men's Bermudas (1session)
5. Men's shorts (1 session)
6. Men's T-Shirt (1 session)

Men's inner garments:

7. Briefs (1/2 session)
8. Vests (1/2 session)

Women's casual wear

9. Ladies Salwar (1 session)
10. Ladies Kameez (1 session)
11. Ladies Chudidhar (1 session)
12. Ladies Pallazo (1 session)

TOTAL: 60 hours**Garment Construction Laboratory - II****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.	Flat lock machine	1
3.	Feed off arm machine	1
4.	Over lock machine	3
5.	Button hole and button stitch machine	1 each
6.	Ironing Table	1
7.	Steam Iron Box	1
Total		39

COURSE OBJECTIVE

To impart knowledge on specialised sewing machines, settings and identification of stitch defects and remedies.

COURSE OUTCOMES

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

1. Identify the major parts and various setting points in garment manufacturing machines.
2. Explain the threading sequence for various stitching machines with illustration.
3. Find out the SPI for a given stitch length and identify stitch defect for the given sample.

LIST OF EXPERIMENTS

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. (session 1)
2. Identify the double needle lock stitch machine parts, study various setting points, perform threading, prepare stitch sample and calculate the SPI for given stitch length. (session 1)
3. Identify an over lock machine parts, study various setting points, perform threading, prepare stitch sample and calculate the SPI for given stitch length. (session 1)
4. Studies of the over lock machine adjustments for needle-thread, looper thread tension, feed-ratio, needle and looper setting and knife setting. (session 1)
5. Identify the flat lock machine parts, study various setting points, perform threading, prepare stitch sample and calculate the SPI for given stitch length. (session 1)
6. Study of the flat lock machine for making adjustments of the needle-thread and looper-thread tension, feed-ratio, needle-and-looper setting and spreader setting. (session 1)
7. Identify the button sewing machine parts, study various setting points, perform threading and prepare stitch sample. (session 1)
8. Identify the Button holing machine parts, study various setting points, perform threading and prepare stitch sample. (session 1)
9. Identify the Feed-off arm machine parts, study various setting points, perform threading and prepare stitch sample. (session 1)
11. Identify the Bar tack machine parts, study various settings points perform threading and prepare stitch sample. (session 1)
12. Identify various stitch defects, their causes and remedies and adjustments of machine settings for remedy. (session 1)

TOTAL: 30 hours

Apparel machinery 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 Industrial machine Domestic machine	30
2	Over lock machine	1
3	Flat lock machine	1
4	Button sewing machine	1
5	Button Hole machine	1
6	Feed off f arm machine	1
7	Flat lock elastic attaching machine	1
8	Bartack sewing machine	1
9	Double Needle Lock Stitch machine	1
	Total	38

COURSE OBJECTIVE

To impart knowledge to the students in the real world of textile / garment industry in various departments.

COURSE OUTCOMES

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

1. Explain the process sequence followed in the industry.
 2. Explain the organisation structure of the industry.
 3. Explain the various technical particulars pertaining to the industry.
-
- The students have to undergo a 2 week in-plant training related to the subject learnt in the immediately preceding semesters.
 - The students have to submit a report of their in-plant training.
 - 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.

COURSE OBJECTIVE

To impart the basic concepts and application of CAD, CAM, CIM in garment industry, fundamentals of E-commerce, application of textile, garment CAD and virtual fitting tools in apparel industry, feature and uses of different software in garment industry.

COURSE OUTCOMES

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

1. Describe the basic terms of computer application, concept of network and application in E-commerce in garment industry.
2. Explain the different modules and application of CAD in textile and garment industry.
3. Explain the application of different computer controlled machines used in garment industry.
4. Explain various virtual fitting and 3D body scanning concept used in the garment industry.
5. Describe the concept of production and management software used in the garment industry.

UNIT I Computer Application in Retail Sales 8

Basic concepts: Definition and concepts of CAA (computer aided administration), CAD (computer aided designing), CAM (computer aided manufacturing), and CIM (computer integrated manufacturing), electronic spread sheet and its application.

Concept of network: Definition, concept, types of network, application of web in garment industry.

E-Commerce: Fundamentals of E-commerce, types of E-commerce and application of E-commerce, electronic data interchange, application of intranets. Mobile applications and their facilities in online retail sales.

UNIT II Textile and Garment CAD 10

Textile CAD: Plain and stripe effect, weave construction library, development of various woven design, simulation of colour and weave effect, CAD system for printing.

Garment CAD: Application of fashion designing softwares, pattern making, grading and marker planning using apparel software.

Computer Aided Colour matching: Principle and application of computer aided colour matching system, fabric defect analysis using image processing system.

UNIT III CAM/CIM in Apparel Industry 9

Computer Controlled Machines: Fabric laying, cutting, sorting, labelling machines, embroidery machine and its softwares. Modern inspection machines/systems, BMS vision cyclops, Zellweger uster fabric scan, shelt on web SPECTOR.

Computer Application in Sewing: Application of computerized sewing machine, computerized unit production systems used in apparel industry, computer controlled overhead transport and computer aided warehouse storage systems. RFID application in sewing department, robotics application in garment industry.

UNIT IV Virtual Fitting Tools 9

Virtual Fitting: Draping models in commercial CAD, virtual fitting, 3-Dimensional apparel design systems for pattern generation and garment fit.

3D body scanning: Application of 3D body scanner, global development of body scanners, challenges of body scanning and working principle of 3D body scanner: layer scanning, white light pattern scanning, image processing method.

UNIT V Different Software used in Apparel Industry

9

Production and Management Tools: Computer aided production planning and control, application of cut planner and general sewing data (GSD), Product development using CAD, RFID application in logistics and supply chain management. Introduction to MIS. Concept of ERP and its application in garment unit. Applications of RFID and ERP in E-commerce. Case studies.

TOTAL: 45 hours

TEXT BOOKS

1. Alison Beazley & Terry Bond, “**Computer Aided Pattern Design and Product Development**”, Blackwell Science Publisher, USA, 2004.
2. Aldrich Winfred, “**CAD in Clothing and Textiles**”, Blackwell Science Ltd., 1994.
3. Sigmon D M, Grady P L and Winchester S C, “**Computer Integrated Manufacturing and Total Quality Management**”, Textile Institute Publication, 1998.

REFERENCES

1. Taylor Patrick, “**Computer in the Fashion Technology**”, Om Book Service, 1997.
2. Gupta, Sanjeev, Gupta Shameena, “**Computer Aided Management**”, Excel Books, 2004.
3. J.Fan,W.Yu and L.Hunter , “**Clothing Appearance and Fit: Science and Technology**” Woodhead Publishing Ltd, 2004.
4. Stephen Gray, “**CAD / CAM in clothing and Textiles**”, Gower Publishing Limited, 1998.

COURSE OBJECTIVE

To impart knowledge to the students about the hand and machine embroidery and its various types of stitches along with traditional embroidery, surface ornamentations, computerised embroidery and costing.

COURSE OUTCOMES

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

1. Explain the fundamentals of hand and machine embroidery.
2. Describe the procedure and types of stitching hand embroidery stitches and Indian traditional embroideries and develop the samples.
3. Describe the procedure of making specialised hand and machine embroidery and develop the samples.
4. Discuss the design generation for machine embroidery using CAD.
5. Explain the working of computerised embroidery machine and derive the cost for the finished embroidery article.

UNIT I Introduction to Embroidery**9**

Hand Embroidery: Introduction, origin of embroidery, general rules for hand embroidery, tracing of embroidery design, precautions to be taken for proper maintenance of embroidery articles. Selection of needle, threads and fabrics for hand embroidery.

Machine Embroidery: Introduction, overview of machine embroidery, general rules for machine embroidery, attachments in sewing machines for embroidery, selection of needle, threads and fabrics for machine embroidery. Causes and remedies.

UNIT II Hand Embroidery Stitches and Indian Traditional Embroidery**9**

Hand Embroidery Stitches: Knowledge, classification and practice of , running stitch, back stitch, cretan stitch, couching, button hole, satin, long and short, wheat, chain, stem, herringbone, cross stitch, knotted stitches and fish bone.

Indian Traditional Embroideries: Type of stitches, designs, colours and materials used for Phulkari, Kasuti, Kashmiri embroidery, Kutch work, Chikkankari, Kantha, Tribal embroideries. Causes and remedies.

UNIT III Specialised Surface Ornamentation**9**

Specialised Embroidery: Knowledge and practice of surface ornamentations, eyelet work, cutwork, richelieu work, lace work, drawn thread and fabric work, patch work, mirror work, appliqué, shaded embroidery, zardosi work, shadow work, stone (kundan) work, badla work, bead and sequins work, bobbin-thread embroidery. Causes and remedies.

UNIT IV CAD in Embroidery**9**

Introduction: Introduction to CAD in embroidery, selection of thread, colour and suitable stitches for embroidery using computer, advantages and limitations of CAD in embroidery.

Design preparation: CAD software used for embroideries, Process of designing, Types of stitches in CAD, its applications and punching procedure.

UNIT V Computerised Embroidery Machine and Costing.**9**

Computerised Embroidery Machine: Types of embroidery machines and their working vertical embroidery machines, multi-head embroidery machines, special attachments in embroidery machines, types and purposes of frames and backing materials. Causes and remedies.

Costing: Estimating and costing of materials and embroidery articles.

TOTAL: 45 hours

TEXT BOOKS

1. Parul Bhatnagar, “**Traditional Indian Costumes and Textiles**”, Abhishek Publications, Chandigarh, 2004.
2. Jay Diamond and Ellen Diamond, “**Fashion, Apparel, Accessories, Home Furnishings**” Pearson Prentice Hall, New Jersey, 2007.
3. Usha Srikant, “**Designs for a lifetime**”, Samata Enterprises, Mumbai, 2002.

REFERENCES

1. Shailaja D. Naik, “**Traditional Embroideries of India**”, A.P.H Publishing Corporation, New Delhi, 1996.
2. Gini Stephens Frings, “**Fashion - From Concept to Consumer**”, Prentice Hall, New Jersey, 1999.
3. Sheila Paine, “**Embroidered Textiles**”, Thames and Hudson Ltd., 1990.
4. Gail Lawther, “**Inspirational Ideas for Embroidery on Clothes and Accessories**”, Search Press Ltd., 1993.
5. **Training Manual for Embroidery Machine Operators**, TAJIMA, UIET, Tirupur, 2003.
6. **Training Manual for Embroidery Machines**, Barudan, Tirupur, 2002.

Semester –V	U15 GE 501R: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: <ol style="list-style-type: none"> Career planning Resume writing Group discussion Teamwork Leadership skills Interview skills Mock interview Mock GDs 					
2.Quantitative Aptitude and Logical Reasoning Topics	Solving problems with reference to the following topics : <ol style="list-style-type: none"> Numbers: Remainder concept Time and work: Fraction technique, Efficiency technique, Pipes and cisterns and Chain rule Simple interest Compound interest Set theory: Venn diagram Puzzles Mathematical operators Syllogism (≥ 4 Statements) Data sufficiency Statement and assumptions Statement and conclusions Company specific aptitude questions 					
3. Verbal Aptitude	Demonstrating English language skills with reference to the following topics: <ol style="list-style-type: none"> Subject verb agreement Selecting the best alternative for the stated parts of given sentences Reading comprehension Contextual synonyms Sentence fillers Writing a story for a given picture Company specific aptitude questions 					

S. Ant

Department of Placement Training

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester VI under Regulations 2015R (CBCS)
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit
Theory						
1	U15GE602BR	Principles of Management	3	0	0	3
2	U15FT601R	Textile Testing and Quality Assurance in Apparel Production	3	0	0	3
3	U15FT602R	Apparel Merchandising and Marketing	3	0	0	3
4	U15FT603R	Industrial Engineering in Garment Production	3	0	0	3
5	noc21-mg25	NPTEL – Six Sigma	3	0	0	3
	noc21-ge06	NPTEL – Entrepreneurship Essentials				
6	U15CE1002R	Open Elective - Disaster Management	3	0	0	3
	U15CE1004R	Open Elective - Municipal Solid Waste Management				
	U15CS1003R	Open Elective - Internet of Things				
	U15ME1004R	Open Elective - Industrial Safety				
	U15MC1002R	Open Elective - 3D Printing Technology				
	U15CS1004R	Open Elective - Mobile Application Development				
	U15CE1003R	Open Elective - Energy Efficiency And Green Building				
	U15EC1006R	Open Elective - Sensors and Smart Structures Technologies				
	U15ME1002R	Open Elective - Renewable Energy Sources				
	U15EE1006R	Open Elective - Renewable Energy Systems				
	U15IT1004R	Open Elective - Python Programming				
U15IT1005R	Open Elective - Introduction to Database Technology					
Practical						

7	U15FT604R	Textile Testing and Quality Control Laboratory	0	0	2	1
8	U15FT605R	Computer- Aided Garment Design Laboratory	0	0	4	2
9	U15GE601BR	Soft Skills and Aptitude - IV	0	0	2	1
					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. Explain the fundamental concepts and principles of management, including the basic roles, skills, and functions of management along with the knowledge of historical development of management process
2. Explain the role of planning and understand the process of planning which includes setting of objectives, strategies, policies and plans and be familiar with the steps in the forecasting and decision-making process
3. Outline the importance and different forms of organising function, explain different organisational charts stating its authority delegation; Explain the function of staffing which involves managing organization structure through proper and effective selection, appraisal and development of the personnel to fill the roles assigned to the employers/workforce
4. Define leadership and identify traits of effective leaders and describe the behaviours that effective leaders demonstrate; State the need for motivation and the types and theories of motivation; Define communication and understand the communication process and list the barriers to effective communication
5. Explain the process and importance of the controlling function and the various organisational control techniques; Provide an overview of the global business management practices and issues

UNIT- I Management Concept and Historical Development 9

Nature and Functions of Management: Definition and importance of Management, Management as a Science or an Art, Management and Administration, Levels of management, Functions of Management. Development of Management Thought: Early Classical Approaches, Neo-Classical approaches, Modern approaches, Contribution of F. W. Taylor and Henry Fayol, Basic forms of business ownership.

UNIT - II Planning and Decision Making 9

Foundations of Planning: Importance of Planning, Steps involved in Planning, Types of plans. Objectives, strategies and planning: Characteristics and types of objectives, Process of setting Objectives, Strategic planning, SWOT analysis, Significance and types of policies, Steps in policy formulation. Managing by Objectives: Elements of MBO system, Advantages and limitations of MBO. Forecasting and Decision Making: Characteristic of a good forecast, Classification of forecasting techniques, Problem solving and decision making, Types of decision making, Certainty, Risk, Uncertainty and ambiguity in decision making.

Unit - III Organising and Staffing 9

Fundamentals of Organising: Nature and importance of organisation, Steps in organising, Forms of organisation –Line, line and staff, Functional, Group organisations. Organisation Structure: Formal and informal organizations, Organization Chart – Types, Benefits and Pitfall, Departmentation by difference strategies. Authority Delegation and De-Centralization: Elements of delegation, Delegation process, Centralisation, Decentralisation, Formalisation. Staffing: Manpower planning, Employee recruitment, Selection, Training, Performance appraisal, Human Resource Development (HRD) – principles, framework, challenges and benefits.

Unit - IV Leadership, Motivation and Communication 9

Leadership styles and theories: Characteristics and functions of leadership, Types of leadership, Leadership styles, Theories, roles of leader. Motivation: Nature and importance of motivation, Types of motivation, Motivational theories. Communication: Importance and characteristics, Formal and informal communication, Forms of communication process, Barriers to effective communication, Overcoming the barriers.

Controlling: Nature and need for control, Steps in control process, Organisational control techniques – Budgetary control techniques, Management auditing, Information and financial analysis, Break even analysis, Requirements for effective control system.

The Global Environment: Globalisation and Liberalisation, Forms of International business, Benefits of globalisation, MNC, Global theories.

TOTAL: 45 hours

TEXT BOOKS

1. Harold Kooritz and Heinz Weihrich, Essentials of Management, Tata McGraw-Hill, New Delhi, 1998.
2. Joseph L. Massie, Essentials of Management, Prentice Hall of India, Pearson Fourth Edition, New Delhi, 2003.

REFERENCES

1. Tripathy P. C. and Reddy P.N., Principles of Management, Tata McGraw-Hill, New Delhi, 1999.
2. Decenzo David and Robbins Stephen A. , Personnel and Human Resource Management, Prentice Hall of India, New Delhi, 1996.
3. JAF Stomer, Freeman R. E and Daniel R Gilbert, Management, Pearson Education, Sixth Edition, New Delhi, 2004.

**U15FT601R TEXTILE TESTING AND QUALITY ASSURANCE IN 3 0 0 3
APPAREL PRODUCTION**

COURSE OBJECTIVE

To impart knowledge about the sampling techniques, different methods of testing procedure for fibre, yarn and fabric and apparel., quality, inspection, quality assurance, control forms, production flow charts, quality control aspects for fabrics and garment manufacturing processes, the standards and tolerances used in the garment industries.

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 fibre and 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 Sampling Techniques, Fibre and Yarn Testing 9

Sampling Techniques: Definitions of random and biased samples, sampling techniques for fibre, yarns and fabrics.

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.

UNIT III Apparel Testing 8

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

Apparel testing: Dimensional stability, durable press evaluation, Snap / button pull strength testing.

UNIT IV Quality, Inspection, Quality Assurance and Control forms 9

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.

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

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

QC in Garment Manufacturing Processes: Quality control in pattern making, grading, marking and marker efficiency and quality control in stitching. Major, minor and critical faults, quality control of trims accessories.

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 OBJECTIVE

To impart knowledge on marketing, fashion merchandising, sourcing, pricing and types of document preparation.

COURSE OUTCOMES

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

1. Describe the various types of market and advertising techniques involved in merchandising.
2. Discuss the types and functions of merchandising.
3. Explain the principles and techniques of fashion merchandising.
4. Discuss the technology involved in sourcing and material management systems.
5. Describe the various types of documents used for merchandising and export.

UNIT I Marketing 9

Apparel marketing: Definition, scope, functions and strategies of marketing.

Market Research: International market, retail and wholesale market and domestic market.

Advertising: Purpose, methods, types of advertising media, sales promotion methods.

UNIT II Merchandising 9

Apparel Merchandising: Definition, functions of merchandising division, roles and responsibilities of merchandiser.

Types of Merchandising: Principles and techniques of apparel merchandising, retail merchandising, visual merchandising, interfacing merchandising with production.

UNIT III Fashion Merchandising 9

Fashion Merchandising: Principles and techniques of fashion merchandising, components of fashion, leaders of fashion, foreign fashion markets, different types of fashion shows, fashion retailing trends.

UNIT IV Pricing and Sourcing 9

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

Sourcing: Definition, need and important factors in sourcing, methods of sourcing raw materials, sourcing of accessories, manufacturing resource planning, JIT technology.

UNIT V Time Management 9

Time management in merchandising, production scheduling, route card format, accessories follow-up, practical check points, computer applications in marketing and merchandising.

TOTAL: 45 hours

TEXT BOOKS

1. Moore Evelyn C., "Path for Merchandising- A Step by Step Approach", Thames and Hudson Ltd., London, 2001.
1. Vijay Barotia, "Marketing Management", Mangal Deep Publication, New Delhi, 2001.

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.

COURSE OBJECTIVE

To impart knowledge about the concept of industrial engineering, method study, the importance of the process of work measurement, plant layout, planning tools and material handling systems related to the apparel industry.

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 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.

UNIT I Introduction

9

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

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

UNIT II Method Study

9

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

Process Chart: Flow process chart, Flow diagram, multiple activity chart, Travel chart, String diagram.

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

UNIT III Work Measurement

9

Work Measurement: Definition, Objective, Techniques

Time study: Definition, steps in making time study, breaking the job into elements, stop watch procedure, pre-determined motion time study.

Standard Time: Rating factor, allowances, mechanism of arriving SAM, SMV and SAM examples for regular garments.

UNIT IV Plant Layout

9

Layout: Objectives, Steps in planning layout, Types of layout, importance of Plant location, Work area planning, quick changeover.

Lean Manufacturing: Definition, objective, concepts and principle, 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, abnormality management.

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

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

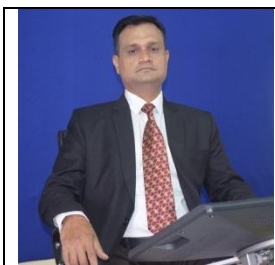
TOTAL: 45 hours

TEXTBOOKS

1. Khan M.I “Industrial Engineering”, New Age International, 2004.

REFERENCES

1. Cooklin Gerry, “Introduction to Clothing Manufacture”, Blackwell Science Ltd., 1995.
2. Johnson Maurice “Introduction of Work Study”, International labour Organization, Geneva, 1995.
3. Solinger Jacob “Apparel Manufacturing Hand Book”, Reinhold Co, 1998.
4. Ralph M Barnes, “Motion and Time Study Design and Management of Work”, Seventh Edition, John Wiley and sons, New York 1980.
5. Khanna O.P “Industrial Engineering and Management” DanpatRai and Sons, New Delhi, 1987.



NOC21- MG25 SIX SIGMA

Dr. Jitesh J. Thakkar
Professor
National Rail and
Transportation Institute (NRTI)
Vadodara - IIT Kharagpur

TYPE OF COURSE: New / Elective / UG
COURSE DURATION: 12 weeks
(18Jan 21 – 09 Apr 21)
EXAM DATE: 25 Apr 2021

PREREQUISITES : Statistics

INTENDED AUDIENCE : Mechanical Engineering, MBA, Industrial Engineering

INDUSTRY SUPPORT : Manufacturing and Service Industry

COURSE OUTLINE

The course on Six-Sigma will focus on detailed strategic and operational issues of process improvement and variation reduction. Six-sigma is a measure of quality that strives for near perfection. It is a disciplined, data-driven approach for eliminating defects (driving towards six standard deviations between the mean and the nearest specification limit) in any process—from manufacturing to transactional and from product to service. A Six-sigma defect is anything outside of customer specifications. To be tagged Six Sigma, a process must not produce more than 3.4 defects per million opportunities.

Six-sigma employs a systematic approach of DMAIC (Define, Measure, Analyze, Improve and Control) for the process improvement. This course will provide a detailed understanding on various issues specific to each phase of DMAIC.

The course is designed with a practical orientation and includes cases, industry examples and MINITAB software applications.

The course is designed to satisfy the need of both industry professionals and University students.

The content is beneficial to both manufacturing and service industry.

COURSE LAYOUT

Week 1: QUALITY: FUNDAMENTALS AND KEY CONCEPTS

Lecture 1: Brief overview of the course

Lecture 2: Quality concepts and definition

Lecture 3: History of continuous improvement

Lecture 4: Six Sigma Principles and Focus Areas (Part 1)

Lecture 5: Six Sigma Principles and Focus Areas (Part 2)

Lecture 6: Six Sigma Applications

Week 2: QUALITY: FUNDAMENTALS AND KEY CONCEPTS

Lecture 7: Quality Management: Basics and Key Concepts

Lecture 8: Fundamentals of Total Quality Management

Lecture 9: Cost of quality

Lecture 10: Voice of customer

Lecture 11: Quality Function Deployment (QFD)
Lecture 12: Management and Planning Tools (Part 1)
Lecture 13: Management and Planning Tools (Part 2)
Week 3: DEFINE
Lecture 14: Six Sigma Project Identification, Selection and Definition
Lecture 15: Project Charter and Monitoring
Lecture 16: Process characteristics and analysis
Lecture 17: Process Mapping: SIPOC
Week 4: MEASURE
Lecture 18: Data Collection and Summarization (Part 1)
Lecture 19: Data Collection and Summarization (Part 2)
Lecture 20: Measurement systems: Fundamentals
Lecture 21: Measurement systems analysis: Gage R&R study
Lecture 22: Fundamentals of statistics
Lecture 23: Probability theory
Week 5: MEASURE
Lecture 24: Process capability analysis: Key Concepts
Lecture 25: Process capability analysis: Measures and Indices
Lecture 26: Process capability analysis: Minitab Application
Lecture 27: Non-normal process capability analysis
Week 6: ANALYZE
Lecture 28: Hypothesis testing: Fundamentals
Lecture 29: Hypothesis Testing: Single Population Test
Lecture 30: Hypothesis Testing: Two Population Test
Lecture 31: Hypothesis Testing: Two Population: Minitab Application
Lecture 32: Correlation and Regression Analysis
Lecture 33: Regression Analysis: Model Validation
Week 7: ANALYZE
Lecture 34: One-Way ANOVA
Lecture 35: Two-Way ANOVA
Lecture 36: Multi-vari Analysis
Lecture 37: Failure Mode Effect Analysis (FMEA)
Week 8: IMPROVE
Lecture 38: Introduction to Design of Experiment
Lecture 39: Randomized Block Design
Lecture 40: Randomized Block Design: Minitab Application
Lecture 41: Factorial Design
Lecture 42: Factorial Design: Minitab Application
Week 9: IMPROVE
Lecture 43: Fractional Factorial Design
Lecture 44: Fractional Factorial Design: Minitab Application
Lecture 45: Taguchi Method: Key Concepts
Lecture 46: Taguchi Method: Illustrative Application
Week 10 : CONTROL
Lecture 47: Seven QC Tools
Lecture 48: Statistical Process Control: Key Concepts
Lecture 49: Statistical Process Control: Control Charts for Variables
Lecture 50: Operating Characteristic (OC) Curve for Variable Control charts
Lecture 51: Statistical Process Control: Control Charts for Attributes
Lecture 52: Operating Characteristic (OC) Curve for Attribute Control charts
Lecture 53: Statistical Process Control: Minitab Application

Week 11 : CONTROL

Lecture 54: Acceptance Sampling: Key Concepts

Lecture 55: Design of Acceptance Sampling Plans for Attributes (Part 1)

Lecture 56: Design of Acceptance Sampling Plans for Attributes (Part 2)

Lecture 57: Design of Acceptance Sampling Plans for Variables

Lecture 58: Acceptance Sampling: Minitab Application

Week 12 : SIX SIGMA IMPLEMENTATION CHALLENGES

Lecture 59: Design for Six Sigma (DFSS): DMADV, DMADOV

Lecture 60: Design for Six Sigma (DFSS): DFX

Lecture 61: Team Management

Lecture 62: Six Sigma: Case study

Lecture 63: Six Sigma: Summary of key concepts



NPTEL
NOC21-GE06 ENTREPRENEURSHIP ESSENTIALS

Prof. Manoj Kumar Mondal
Assistant Professor,
Rajendra Mishra
School of Engineering Entrepreneurship
IIT Kharagpur

TYPE OF COURSE: New / Elective / UG
COURSE DURATION: 12 weeks (18Jan 21 – 09 Apr 21)
EXAM DATE: 24 Apr 2021

PREREQUISITES : None

INTENDED AUDIENCE : All students with education up to higher secondary can take up this course.

INDUSTRY SUPPORT : All start-ups, companies in emerging technology domains, companies adopting 'corporate entrepreneurship', professionally managed companies

COURSE OUTLINE

The course provides foundational knowledge on various aspects of entrepreneurial venture creation and management during its life-cycle. It has been designed to address multidisciplinary audiences. The objective of the course is to teach key issues faced by entrepreneurs and managers at different stages of the life-cycle of an enterprise and is relevant both for aspiring entrepreneurs and for decision makers in established enterprises. Topics can be classified in some major themes such as : Making a choice to create an entrepreneurial venture, current trend of technology entrepreneurship, how to start a start-up, identifying opportunities, factors driving competitive advantages, organizational structure, basic knowledge of financial statements and project report, introductory knowledge on marketing management, human resource management, & strategic management, risk analysis, legal aspect of business, how to raise fund during life-cycle of a new ventures.

ABOUT INSTRUCTOR

Manoj K Mondal, Assistant Professor, Rajendra Mishra School of Engineering Entrepreneurship IIT Kharagpur, is a senior financial professional, an academician and an innovator with several patents to his credit. He has received several laurels for his innovations including gold medal for Best Innovation (2008) awarded jointly by Lockheed Martin, Stanford University, University of Texas at Austin USA and FICCI India, and the best innovation award by Ministry of Chemicals & Fertilizers (2014). Dr. Mondal is presently teaching entrepreneurship at IIT Kharagpur and has been mentoring many aspiring entrepreneurs for more than a decade. He is also an active member of an entrepreneurial venture (nucleodyne.com).

COURSE LAYOUT

Week 1: Introduction
Dhirubhai Ambani & Sofia
Myths & Realities about entrepreneurship
entrepreneurial qualities
Why start-ups fail?

- Week 2: Mission, vision, entrepreneurial qualities – I
Mission, vision, entrepreneurial qualities – II
Value proposition
Business Model canvas
Business model generation
- Week 3: Competitive advantage
Lean start-up – 1
Lean start-up – 2
Team and early recruit
Legal forms of business
- Week 4: Marketing management 1
Marketing management 2
Market research –I
Market research –II
Market research –Example
- Week 5: Introduction to financial statements
Profit & Loss statement
Balance sheet
Cash flow
Example – 1
Example – 2
Cost-volume-profit & Bread-Even analysis
Capital budgeting
- Week 6: Business plan-I
Business plan-II
Pitching
Go-to-market strategies
Does & Don'ts
- Week 7: How to innovate
Design Thinking
Design-Driven Innovation, Systems thinking
Open innovation, TRIZ
How to start a start-up?
- Week 8: Government incentives for entrepreneurship (1 lecture)
Incubation, acceleration
Funding new ventures – bootstrapping, crowd sourcing,
angel investors, VCs, debt financing (3), due diligence
Legal aspects of business (IPR, GST, Labour law)
- Week 9: Cost, volume, profit and break-even analysis
Margin of safety and degree of operating leverage
Capital budgeting for comparing projects or opportunities
Product costing
Product pricing

Week 10: Funding new ventures – bootstrapping, crowd sourcing,
Angel investors, VCs, debt financing (3), and due diligence
Incubation and acceleration
Government incentives for entrepreneurship
Project cost and Financial Closure

Week 11: Dos & Donts in entrepreneurship
Growth Hacking
Growth Strategy
Legal aspects of business (IPR, GST, Labor law)
Negotiation skill

Week 12: Human Resource management in startups
Pivoting
Entrepreneurial cases
Risk assessment and analysis
Strategy management for entrepreneurial ventures
Factors driving success and failure of ventures
Concluding remarks

COURSE OBJECTIVE

To impart practical knowledge on determination of various yarn and fabric properties.

COURSE OUTCOMES

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

1. Prepare the test specimen and determine the various yarn properties.
2. Prepare the test specimen and determine the various fabric properties.
3. Analyse the properties of given fabric sample.

LIST OF EXPERIMENTS

1. Determination of yarn count, lea strength and CSP. (1 session)
2. Determination of single yarn strength. (1 session)
3. Determination of yarn evenness grades using yarn-appearance boards. (1/2 session)
4. Determination of single yarn and double yarn twist. (1/2 session)
5. Determination of fabric tensile strength, seam strength and seam slippage properties. (1 session)
6. Determination of fabric abrasion resistance by using Martindale abrasion tester. (1 session)
7. Determination of fabric bursting strength by using hydraulic bursting tester. (1 session)
8. Determination of fabric tearing strength by using Elmendorf tearing tester. (1 session)
9. Determination of fabric stiffness and crease recovery angle. (1 session)
10. Determination of pilling tendency of fabric by using ICI pill box tester. (1 session)
11. Determination of drape coefficient of fabric by using drape meter. (1 session)
12. Determination of course length of knitted fabric by using course length tester. (1 session)
13. Determination of air permeability of fabric testing. (1 session)
14. Determination of wickability of fabric. (1/2 session)
15. Analysis of Seam puckers. (1/2 Session)

TOTAL: 30 hours

Textile Testing and Quality Control 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
	Total	21

COURSE OBJECTIVE

To impart practical knowledge on pattern making, grading and marker planning through industrial CAD software and developing design through commercial designing software.

COURSE OUTCOMES

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

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

LIST OF EXPERIMENTS

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)

11. (i) Development of design, pattern and pattern grade for men's brief.
(ii) Preparation of marker plan.
(iii) Calculation of marker efficiency for single jersey knitted fabric of 30" dia and develop a lay lot plan. (1session)
12. (i) Development of design, pattern and pattern grade for men's vests.
(ii) Preparation of marker plan.
(iii) Calculation of marker efficiency for single jersey knitted fabric of 36" dia and develop a lay lot plan (1session).

TOTAL: 60 hours

Computer- Aided Garment Design 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.	Pattern Drafting, Grading and Marker Planning Software -Tuka CAD	1
4.	Pattern Drafting, Grading and Marker Planning Software -Lectra software	30
5.	Reach Fashion Studio	1
6.	Adobe Photoshop	30
7.	Corel Draw	30
Total		123

Semester –VI	UI5 GE 601B R: SOFT SKILLS AND APTITUDE – IV (For all Department 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. Crypto arithmetic problems b. Permutation & Combination c. Probability d. Clocks & Calendars e. Functions & polynomials f. Logarithm g. Geometry h. Puzzles i. Data interpretation j. Data Sufficiency k. Company specific aptitude questions (AMCAT & Co cubes)					
a. 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 aptitude questions					


 Department of Placement Training
 Sonsa College of Technology,
 Salem-638 065.

COURSE OBJECTIVE

To enable students to define and discuss the terms related to fashion, the classification, understanding and selection of clothing, to grasp the elements of design and principles of design and the portfolio presentation.

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.

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 2 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 – 3 Wardrobe planning

9

Selection of clothes

Clothes for children, middle-aged and adults. Types of clothes according to different types of human figure, Different materials for different clothes, Fabrics and 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 – 4 Elements and Principle 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

Designer boards - Mood board, fabric board, colour board, accessory board. Fashion illustration – head theories, Illustration techniques – strokes, hatching, shading; Colouring techniques – Medias for colouring. Portfolio presentation – styles of presentation - Fashion shows.

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.

REFERENCES:

1. Sumathi, G.J. “Elements of Fashion and Apparel Design” New Age International Publishers, New Delhi.
2. Kathryn McKelvey “Fashion Source Book” Balckwell Publishing New Delhi.
3. Jane Mills and Janet K.Smith “Design Concepts” Fairchild Publications, New York.
4. Judith Rasband „Wardrobe strategies for women“, Delmar publishers, London.
5. Jeannette A.Jarnow, Mirianr Guerreiro & Beatrice Judelle, “Inside the fashion business”4th edition Mac Millan Publishing Company, NewYork.

Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester VII 2015R (CBCS)
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Theory							
1	U15GE701R	Professional Ethics and Human Values	3	0	0	3	45
2	U15FT701R	Apparel Costing and Export Documentation	3	0	0	3	45
3	U15FT910R	Elective - Fashion Forecasting and Portfolio Development	3	0	0	3	45
	U15FT911R	Elective - Advances in Garment Production					
	U15FT913R	Elective - Fashion Photography					
4	U15FT915R	Elective - Entrepreneurship Development and Management of Apparel Unit	3	0	0	3	45
	U15FT916R	Elective - Textiles in Interior Décor					
	U15FT918R	Elective - Fashion Business Management					
5	U15FT921R	Elective - Retail Management	3	0	0	3	45
6	U15ME1010R	Open Elective - 3D printing	3	0	0	3	45
	U15MC1002R	Open Elective - 3D Printing Technology					
	U15CE1002R	Open Elective - Disaster Management					
	U15CE1003R	Open Elective - Energy Efficiency And Green Building					
	U15ME1004R	Open Elective - Industrial Safety					
	U15EE1007R	Open Elective - Innovation, IPR and entrepreneurship Development					
	U15ME1005R	Open Elective - Maintenance Engineering					
	U15EC1008R	Open Elective - Mobile Technology and its application					
	U15ME1002R	Open Elective - Renewable Energy Sources					
U15EE1006R	Open Elective - Renewable Energy Systems						

Practical							
7	U15FT702R	Garment Construction Laboratory - III	0	0	2	1	30
8	U15FT703R	Apparel Production and Quality Evaluation Laboratory	0	0	2	1	30
9	U15FT704R	Fashion Portfolio Development	0	0	4	2	60
10	U15FT705R	Internship	0	0	0	3	2 months
						Total Credits	25

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

1. Identify the core values that shape the ethical behaviour of an engineer.
2. Utilize opportunities to explore one's own values in ethical issues.
3. Apply codes of ethics and standards in the engineering field.
4. Explore various safety issues and ethical responsibilities of an engineer.
5. Recognize and resolve global issues.

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 – Spirituality.

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- 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 – 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 – Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Importance and consequences of whistle blowing - Professional Rights – Employee Rights – Intellectual Property Rights (IPR) – Discrimination.

UNIT-V GLOBAL ISSUES**9**

Multinational Corporations – Environmental Ethics – Computer Ethics and Internet- Engineers and Technological progress – Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership – Participation in professional societies-Sample Code of Conduct (pertaining to specific professional societies).

TOTAL: 45 HOURS**TEXT BOOK**

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, 2000.
4. R.Subramanian, "Professional Ethics", Oxford University Press, Reprint, 2015.
5. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, 2001.
6. David Ermann and Michele S Shauf, "Computers, Ethics and Society", Oxford University Press, 2003.

COURSE OUTCOMES

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

1. Define costing and list the types of cost; explain the elements of cost, types of overheads and components of cost sheet.
2. List the factors that determine the price of a garment and its components.
3. Evaluate the different types and functions packing and labelling their cost ; cost of bought out components, compute the total cost of different types of garments and to solve the problems related to costing.
4. Analyse the facilities available for garment exporters with regard to Govt. assistance and bank finance; Describe MDA (Market Development Assistance) and MDF (Marketing Development Fund).
5. Compare the procedures involved starting up a garment unit, export procedures, payment methods; listing and preparing the export documents and INCO Terms connected with garment export.

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	2	2	2	2	2			3	3	2	3	2	3
CO2	3	3	2	3	3	3			1	2	3	2	2	2	3
CO3	2	3	1	3	1	1	1		1	2	3	1	3	1	1
CO4				1							3				2
CO5	1	2		1	1	1	1	2		3	2	1	1		2

UNIT I 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 overhead distribution overhead , Components of cost sheet, Break even analysis.

UNIT II 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 - Simple problems to estimate cost of woven and knitted fabrics.

UNIT III PREPARATION OF COST SHEET**9**

Packing and Labelling Cost - Different types of packing and costs. Different types of labels, uses of brand and size label and their cost. Cost of bought out components - Thread, Button, Zippers, Interlining. Shipment cost. Garment cost calculation: woven garment , shirt and trouser, Knitted garment , T-shirt, Collar shirt, brief and vest, Develop spread sheet for garment costing. Waste minimisation in garment production.

UNIT IV FACILITIES FOR EXPORTERS**9**

Facilities Available for Garment Exporters , Subsidies to garment exporters - Duty drawback , Export finance through banks , Export credit , short term, medium term and long term credits Export promotion councils - Export Credit Guarantee Corporation (ECGC) , Export import bank - Market development assistance (MDA) and Market Development fund (MDF) , TUFS - Apparel parks , Brief outline about EPZs and SEZs.

UNIT V EXPORT PROCEDURES AND DOCUMENTATION

9

Export Procedures: Procedure to start up a garment unit - 100% EOU - Role of Government policies - Registration of export units (TIN, CST, IEC, AEPC), INCO terms (FOB, CFR, CIF), Types of payment methods (D/A, D/P, L/C). Role of forwarding agent, Concept of GST.

Export Documentation: Documents connected to exports - Principal documents, auxiliary documents, Pre-shipment documents, Inspection certificates, Customs, Air and sea transport, Insurance, Documents for claiming export assistance, Post-shipment documents , Exchange control regulations relating to garment exports.

TOTAL: 45 HOURS

TEXT BOOK

1. Johnson Maurice and Moore E., Apparel Product Development, Om Book Service, New Delhi, 2001.
2. Katherine McKelvey, Fashion Source Book, Om Book Service, New Delhi, 2001.

REFERENCES

1. Jeannette Jamow, Kitty G. Dickerson, "Inside the Fashion Business", Prentice Hall, 1997.
2. KoshyDarlie O., "Effective Export Marketing of Apparel", Global Business Press, 1996.
3. Shivaramu S., "Export Marketing , A practical guide to exporters", Wheeler Publishing, 1996.
4. 5. Hearle J. W. S., Hines T. and Suh. M. (Ed.), "Global Marketing of Textiles" JTI, 1997.

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 formal wear and women's traditional wear and describe the process involved in pattern making and the construction of it.
2. Design casual wear and describe the drafting procedure and the steps involved in the construction of casual wear.
3. Analyse the method of measuring of western wear and state the drafting procedure and the steps involved in the construction of western wear and state the importance of lingerie and demonstrate the process of pattern drafting and construction 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)														
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	1						1	2	2	1
CO2	2	3	3	3	3	1						1	2	2	1
CO3	2	3	3	3	3	1						1	2	2	1

LIST OF EXPERIMENTS**CONSTRUCTION OF MEN'S FORMAL WEAR**

1. Men's formal shirt (2 sessions)
2. Men's formal trousers (2 sessions)
3. Men's casual trousers (2 sessions)

WOMEN'S TRADITIONAL WEAR

4. Ladies Sari Blouse (1 sessions)

WOMEN'S CASUAL WEAR

5. Ladies Night Dress (2 sessions)

WOMEN'S WESTERN WEAR

6. Ladies Top (1 session)
7. Ladies Skirt (1 session)

WOMEN'S LINGERIE

8. Ladies Brassiere and Panties (1 session)

TOTAL: 30 HOURS

Garment Construction Laboratory - III

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.	Flat lock machine	1
3.	Feed off arm machine	1
4.	Over lock machine	2
5.	Button hole and button stitch machine	1 each
6.	Ironing Table	1
7.	Steam Iron	3
Total		40

COURSE OUTCOMES

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

1. Prepare the line, layout and material planning for the apparel industry and sew the garment based on buyer's specification sheet.
2. Evaluate the garment qualities like measurements, fittings and placement of trims and analyse the different types of defects and their causes and remedies.
3. Determine the dimensional stability property, strength of button, peel bond and zipper of the 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	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	1		2			3	3	3	3	3
CO2	3	3	3	3	3	2						2	3	2	1
CO3	2	3	2	3	3	1						3	3	2	1

LIST OF EXPERIMENTS

1. Preparation of operation bulletin (operation break down, operation sequences, machinery plan, man power planning and SAM value) for a given garment. (1 session)
2. Line layout planning for the given garment for bulk production (operation sequences, SAM value and target per day). (1 session)
3. Determination of folders/clip attachment required for the given garment. (1 session)
4. Estimation of thread consumption for a given garment. (1 session)
5. Estimation of SAM and identify the VA, NVA elements for given operation.(1 session)
6. Development of proto sample by using buyer's measurement (specification sheet) and analyse garment fit using mannequins. (2 sessions)
7. Analyse the given fabric defects using standards and suggest causes and remedies. (1 session)
8. Analyse the given garment defects using standards and suggest causes and remedies. (1 session)
9. Determination of Button Pull Strength. (1 session)
10. Determination of Peel bond strength of fusible interlinings. (1 session)
11. Determination of appearance and dimensional stability of garment (1 session)

Demonstration

12. Determination of Zipper strength. (1 session)

TOTAL: 30 HOURS

Apparel Production and Quality Evaluation Laboratory

List of equipment required for a batch of 30 students

S. No.	Name of the equipment / software	Quantity Required
1.	Mannequins	5
2.	Fabric tensile strength tester	1
3.	Button Pull Strength tester	1
4.	Course length tester	1
5.	Automatic Washing Machine	1
6.	Single needle lock stitch machine	30
Total		39

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. Draw 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.

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)														
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	3	2	1	1	1		2	3	1	2	2	3	
CO2	1	3	3	1	3	1				3	2	3	3	3	3
CO3	2	2	2	2	3	1				2	1	3	3	1	1

LIST OF EXPERIMENTS

1. Selection of themes for a particular season and festival.
2. Forecasting colours, Patterns and Fabric based on international forecast.
3. Preparation of Story Boards, Mood Boards, Colour Boards.
4. Illustrating fashion models.
5. Collections of fabric swatches and colours based on future forecast.
6. Selection of fabric swatches.
7. Selection of surface ornamentation techniques.
8. Preparation of various styles from selected fabrics.
9. Selection of Seams, Necklines, Collars, Sleeves.
10. Selection of Accessories.
11. Construction of garment using required accessories and designs.
12. Report Preparation, Album, and Write-ups.

*Minimum of 4 garments is to be developed for the course.

TOTAL: 60 HOURS

COURSE OUTCOMES

To enable students to, same as mini project

1. Imbibe the real time problem-solving ability with the problems given and
2. Investigate the solutions in the real world of production.
3. Prepare an internship 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	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 those who opted for internship have to undergo 8-week internship in leading garment industries.
- The students have to submit a report of their internship project.
- A committee of two staff members as internal examiner and an external examiner will conduct a Viva voce and evaluate student performance.
- Students successfully completing the 8-week internship will be awarded Three credits.

ELECTIVE

U15FT910R

FASHION FORECASTING AND PORTFOLIO DEVELOPMENT

3 0 0 3

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. Select a theme and prepare different boards for the development of portfolio.
4. Build design ideas and develop new product through various stages based on the ideas.
5. Analyse and evaluate the economy of the 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)														
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	3	3	3	1		1	1	2		3	2	3	2
CO2	1	3	3	3	3	1	1	1	2	3	1	3	3	3	2
CO3	1	3	3	2	3	1	1		1	3	2	3	3	3	3
CO4	2	3	3	3	3	1				3	2	3	3	3	3
CO5	1	3	3	3	3	1				2	2	3	3	2	3

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 PORTFOLIO PREPARATION

9

Portfolio Preparation: Forecasting colours, pattern and fabric for different seasons based on international forecast. selection of theme and prepare mood board, storyboard, fabric development board, fabric swatches and colours, design development board, preparation of various styles for selected fabrics, selection of accessories, final presentation, flats and specification.

UNIT IV FASHION TRIANGLE OF BALANCE

9

Fashion Triangle of Balance: Building of the first design ideas, planning to costing, line building, from spec to samples, production selling, three seasons. Developing new product: Idea generation, idea screening, concept testing, business analysis, the product development process, group product development, research, test marketing, commercialization.

Economic Analysis: Evaluation of Portfolio of products or projects, introduction and purpose of economic analysis, market potential, market demand, estimating sales, estimating cost and profit.

TOTAL: 45 HOURS

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.
3. Maurice J. Johnson & Evelyn C.Moore, "Apparel Product Development", Second Edition, Prentice Hall Upper saddle river, New Jersey, 2001.

REFERENCES

1. Susan Dillon, "The Fundamentals of Fashion Management", AVA Publishing (UK) LTd., 2012.
2. Dorothy M. Campbell, Pamela Bondi Cignetti, Beverly J. Melenyzer, "How to Develop a Professional Portfolio: A Manual for Teachers", Pearson publisher, 1997.
3. Aspelund Karl, "Design Process", Fairchild Publication, 2010.
4. Mastudaira T and Suresh M.N., "Design Logic of Textile Products", Textile Progress, Textile Institute, Manchester, 1997.
5. Metha P.L., "Managerial Economics", Sultan Chand and Co. Delhi, 2007.
6. Doris H. Kincade, Fay Gibson, and Ginger Woodard "Merchandising Math: A Managerial Approach", Pearson Education, Inc. Published by Prentice Hall, 2004.
7. Chelsea Rousso, "Fashion Forward - A Guide to Fashion Forecasting", Bloomsbury Academic, 2012.

COURSE OUTCOMES

1. Explain the new product development and application areas.
2. Emphasis on the technological advances in sewing.
3. Describe the technological advances in digital printing on improved apparel production.
4. Understanding the latest technological developments in pressing technology.
5. State the need and benefits of advanced automated fabric inspection system.

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)														
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	3	2	3	3	2		2	1	1	3	2	2	1
CO2	3	2	3	3	3	3	1		1			1	3	2	2
CO3	2	3	3	3	3	3	2		1			1	3	3	2
CO4	3	3	3	3	3	3	1					3	3	3	2
CO5	3	3	3	3	3	3	1					1	3	2	2

UNIT I APPAREL PRODUCT DEVELOPMENT**9**

Introduction, process model for clothing product development, models of new product development, product development tools and application areas, product lifetime management (PLM), demand-led new product development, future trends.

UNIT II TECHNOLOGICAL ADVANCES IN SEWING GARMENTS**9**

Introduction, development of the industrial sewing machine, advances in sewing needle design, advances in sewing thread technology, advances in sewing machine automation, semi-automated equipment, machines using computer numerical control. Future trends in clothing technology: Bonded garments, Seamless garments. Alternative method of garment production, moulding, robotics and pneumatic system.

UNIT III DIGITAL PRINTING OF GARMENTS**9**

Introduction, advances in digital printing technology, design potential and limitations of digital textile printing, digital textile printing and its role to enhance industry apparel production, applications. Advances in embroidery technology.

UNIT IV DEVELOPMENTS IN PRESSING TECHNOLOGY**9 Pressing:**

Introduction, the pressing process, pressing with pressure, pressing without pressure, crease resistant finishes, permanent creases, recent trends in apparel pressing technology.

Unit V AUTOMATED FABRIC INSPECTION AND EVALUATION**9**

Fabric Inspection: Introduction, the principles of automatic fabric inspection, fabric quality, Kawabata evaluation system, fabric assurance by simple testing (FAST), automating the results of objective reporting and analysis in KES-F, development of the main analysis form.

TOTAL: 45 HOURS**TEXTBOOK**

1. C.Fairhurst, "Advances in Apparel Production", Woodhead Publishing Limited, 2008.

REFERENCES

1. The Apparel Production Sourcebook, Asian Edition, Fashionindex, Inc., 2010.
2. Apparel Design and Production Handbook, Fashionindex, Inc., 2001.

COURSE OUTCOMES

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

1. Explain the types of camera and its accessories.
2. Explain the fundamental handling techniques of the camera.
3. Apply lightings techniques and the types of films.
4. Compare the photography techniques in the fashion and modelling field.
5. Develop the photo using different methods.

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)														
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		2	3	1	3		1				1	1	1	3	1
CO2	2	3	3	3	3	1	1			1	3	1	3	3	1
CO3	2	3	3	3	3	1	1				1	1	3	1	1
CO4	2	3	3	3	3	1	1			2	1	1	3	3	
CO5	3	3	3	3	3	1					1	1	3	3	1

UNIT I INTRODUCTION**9**

Camera Types: 35mm, SLR, Digital camera. Working principle of camera.

Accessories: General accessories, lenses, lens filters, film types, flashlights, lighting accessories, power accessories, system accessories. Care and maintenance of camera.

UNIT II PHOTOGRAPHIC TECHNIQUES**9**

Camera Techniques: Basic techniques, fundamentals of composition, depth of field, shutter speed, focussing, usage of exposures.

Equipment Techniques: Filter techniques, lens techniques, flash techniques and studio flash techniques.

Subject Techniques: landscape, night photography, portrait, action photography and special effects. Outdoor and Indoor Photography equipments, methods and lighting techniques.

UNIT III LIGHTING AND FILM**9**

Lighting: Concept and importance, types of lighting: front light, side light, back light, revealing Light, controlling light, flash and studio lighting.

Film Types: Black and white, colour, film speed, film format.

UNIT IV SUBJECT PHOTOGRAPHY**9**

Subject Photography : Fashion photography in different media: modelling, newspaper, magazines and fashion shows.

UNIT V DEVELOPING AND PRINTING**9**

Developing and Printing: Basics of developing and printing, image mixing and printing, computers in photography, video photography, tools used to edit photos, mobile photography.

TOTAL: 45 hours

TEXT BOOK

1. NirmalPasricha, "A Professional's Basic Photography", Black Rose Publications, Delhi, 2002.
2. Daniel Lezano, "The Photography Bible", A David and Charles Book., United Kingdom, 2004.
3. Simon Joinson, "Get the most from your Digital Camera", A David and Charles Book., United Kingdom, 2004.

REFERENCES

1. Miller, W.R., "Basic Industrial Arts, Plastics, Graphic Arts, Photography", McKnight Publishing Company, Illinois, 1978.
2. John Hedge, "Photography Course", John Hedge Co, 1992.
3. Steve Bavister, "35 mm Photography -The Complete Guide", A David and Charles Book., United Kingdom, 2004.
4. Peter Cattrell, "Photography", Octopus Publishing Group Ltd, London 2005
5. Sue Hillyard, "The Photography Handbook- A Step by Step Guide", New Holland Publishers, London, 2003.

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. Study the procedure to manage a garment industry.
5. Evaluate the importance of market analysis and advertisement.

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)														
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		3	1	3		1	3	3	1	2	3	1	3	3	3
CO2	1	3	2	2	1		2		1	2	3	1	1	1	2
CO3	2	2	1			1				1	1	1	1	2	2
CO4	1	3	3	3	3	2	3		2	2	2		2	1	2
CO5	1		1		1	2			1	2	1		1	1	2

UNIT I ENTREPRENEURSHIP**9**

Definition of an entrepreneur, entrepreneurship management and ownership, compare entrepreneurship with management, characteristics of an entrepreneur, role of an entrepreneur in industrial development, opportunities for entrepreneurship.

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.

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, forecasting developments and charting an action plan, identifying the product/service evaluating the business venture, market research.

Financial Assistance: Bank assistance, 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.

TOTAL: 45 HOURS

TEXTBOOK

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.

REFERENCES

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. Define Interior decoration and design and learn the types and its applications.
2. Explain elements of design and principles of design in interiors.
3. Apply the elements in interior decoration.
4. Analyse and choose the decorating styles and designing process.
5. Examine the factors and procedure of designing of residential and commercial buildings.

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)														
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	2	1	1			3				3	1	1	
CO2	1	1	3	1	2		1	3		1		3	1	1	1
CO3	3	3	3	2	2			3		1		3	3	3	2
CO4	3	3	3	3	3			3				3	3	3	2
CO5	3	2	3	2	2	2	3	3				2	3	3	2

UNIT I INTRODUCTION**9**

Introduction: Introduction and its importance, objectives of interior designing.

Design: Definition, importance, types structural design and decorative design.

Design themes: Types and application.

UNIT II ELEMENTS AND PRINCIPLES OF DESIGN IN INTERIORS**9**

Elements of Design in Interior: Line: types, characteristics and importance. Form: size and shape, characteristics. Colour: Sources, qualities, Application of colour in Interiors. Texture: Types and significance in Interiors.

Principles of Design in Interior: Harmony: Definition, Effects and application in interiors. Balance: Definition, type and application. Proportion: Definition, importance and scale relationship. Rhythm: Definition, ways of achieving in interiors. Emphasis: Definition and applications.

UNIT III INTERIOR DECORATING ELEMENTS**9**

Lighting: Physical aspects of light, psychological aspects of light, function, type and use.

Colour: Effects of colours, colour mixing, colour planning in design.

Floor covering, Ceiling, Roof: Types, characteristics, use, care and maintenance of materials and finishes suitable for interiors.

Window: Window treatments in interior design. Furniture: Type, utility and arrangement.

UNIT IV DECORATING STYLES AND DESIGNING PROCESS**9**

Decorating Styles: Colonial, country, eclectic, modern, neo-classical, victorian, other decorating styles.

Designing process: Undertake space planning, determining the best layout, choose a colour scheme, determine flooring requirements, select wall treatments, determine lighting requirements, select furnishings, choose window coverings and arrange the furniture and accessories.

UNIT V RESIDENTIAL AND COMMERCIAL INTERIORS

9

Residential Interiors: Space planning, factors influencing residential space planning, walls, floor, ceiling and false ceiling: interior building finishes their suitability and care, interior decorating elements for residential building.

Commercial Interiors: Factors influencing the designing of commercial space, furniture for different activities in commercial establishment, building materials for the finishing effect of interior building components, visual merchandising in textile and garment stores.

TOTAL: 45 HOURS

TEXTBOOKS

1. Rowe T, "Interior Textiles: Design and Developments", Wood head Publishing Series in Textiles, 2009.
2. Pile, John F. "A history of interior design". Laurence King Publishing, 2005.

REFERENCES

1. Mckay, Harriet, "Imagined interiors: representing the domestic interior since the Renaissance. London", V & A Publications, New York, Dist. in North America by HN Abrams, 2006.
2. Piotrowski, Christine M, "Designing commercial interiors", John Wiley and Sons, 2010.
3. Kilmer, Rosemary; Kilmer, W. Otie, "Designing interiors", John Wiley & Sons, 2014.
4. Swift, Ellen, "Style and function in Roman decoration: living with objects and interiors", Routledge, 2018.
5. Pegler M.M., "Visual Merchandising and Display", IV Edition, Fair child Publications, NewYork, 2001.

COURSE OUTCOME

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

1. Define and discuss fashion business and the inter-linkage among designer, manufacturer and retailer.
2. Paraphrase the fashion forecasting process and various agencies involved in forecasting.
3. Analyse different types of advertising strategies and competitive analysis of fashion organizations.
4. Elucidate the strategies of fashion designers to promote new designs.
5. Investigate the various types of fashion shows and methods to present a show.

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)														
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	3	2	2	2	1	1	1	2	2	1	2	1	1
CO2		1	2	2	2	2	2	1	1	2	2	2	1	1	1
CO3		1	1	2	1	2	1	1	1	1	1	2	1	1	1
CO4	1	1	3	2	2	3	1	2	1	2	2	3	2	2	2
CO5	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1

UNIT I FASHION BUSINESS**9**

Importance, scope of fashion business, manufacturer and retailer,

Product development: line planning, design creation, design development, production planning, actual production and line distribution

UNIT II FASHION FORECASTING**9**

Fashion marketing mix and promotion, process of fashion forecasting, sources of fashion forecasting information, Color forecasting, Fashion forecasting frameworks, fashion diffusion processes, social and cultural influences on fashion, Competitive analysis of fashion organizations.

UNIT III ADVERTISING AND MEDIA PLANNING**9**

Definition, advertising objectives, benefits, economic aspects and ethics in advertising. Advertising and marketing mix.

Advertising Appeal: Message, reach, frequency, impact and effectiveness. Matching media and market, Media strategy, media mix, media scheduling. Comparative evaluation, Basics of social media marketing, components of mall management, E-commerce, E-business.

UNIT IV FASHION DESIGNERS' STRATEGIES**9**

Role of fashion ambassadors, fashion blogs.

Fashion show case events: online interactive fashion show, press release, digital media, online advertising.

Future Fashions: Designer's analytical approach. Social media fashion network.

UNIT V FASHION SHOWS**9**

Fashion Show: sell merchandise, fashion show categories, specialized fashion presentations, haute couture shows, ready to wear shows, trade shows, trade association shows, press shows

TOTAL: 45 HOURS

TEXTBOOKS

1. J. Jarnow and K.G. dickerson, " Inside the Fashion Business", Prentice Hall, 1997.
2. Elaine Stone, Jean A Samples, "Fashion Merchandising", Mc Graw Hill book, 1985.
3. Eascy M., "Fashion Marketing" Blackwell Science, 1994.

REFERENCES

1. Fashion from Concept to Consumer by Gini Stephens Frings, Pearson Prentice Hall, 2007
2. Guide To Producing A Fashion Show, second edition, Judith C Everett, Kristen K Swanson, Fairchild Publications, Inc, New York
3. Fashion Forecasting, 2nd Edition, Research, Analysis, and Presentation, Evelyn L. Brannon, Berg Publishers.
4. SA Chunawalla, KC Sethia, "Foundations of Advertising – Theory and Practice", Himalaya publishing house, Mumbai, 2009
5. Creative Fashion Presentations, Polly Guerin, Fairchild Publication.

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 behaviour of the customers, explain the concept and their significance of retail location strategy
3. Evaluate 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. Compare the various methods and techniques involved in designing the virtual retailing and store space management

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)														
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CO1		1	2	2	2	2		2	2	3	2	2	2		
CO2		3	1	3	2	2		1		3	1	2	2	1	2
CO3	1	3	2	3	2	2		3	1	2	1	1	2	1	2
CO4		3	2	3	3			2	1	3	2	2	2	1	2
CO5		3	2	3	3			1	3	3	2	2	2	1	2

UNIT I BASIC CONCEPTS OF RETAILING**8**

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 Sub dealers.

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 BEHAVIOUR AND RETAIL LOCATION STRATEGY**9**

Retail Consumer Behaviour: 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.**

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 VIRTUAL RETAILING AND STORE SPACE MANAGEMENT 9

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.**

Store Space Management: Planning of assortment, racks, shelves, bins, windows, fixtures and balance of display in a show room, wall as retail selling tools, wall planning and colour planning.

TOTAL: 45 HOURS

TEXT BOOK

1. Chetan Bajaj, RajnishTuli, Nidhi V Srivastava, “Retail Management”, Oxford University Press, 2005.
2. K.V.S. Madaan, “Fundamentals of Retailing”, Tata McGraw-Hill, New Delhi, 2009.

REFERENCES

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.

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															
<small>(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak</small>															
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
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CO2	2	1	2				2					3	1	1	
CO3	1	2	3	1	1		1					2	2	3	
CO4	2	2	3	3	1		2			2	1	2	1	1	1
CO5	2	3	3	2	3	1	1		1	3	2	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 2 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 – 3 WARDROBE PLANNING 9

Selection of clothes

Clothes for children, middle-aged and adults. Types of clothes according to different types of human figure, Different materials for different clothes, Fabrics and 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 – 4 ELEMENTS AND PRINCIPLE 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**

Designer boards - Mood board, fabric board, colour board, accessory board. Fashion illustration – head theories, Illustration techniques – strokes, hatching, shading; Colouring techniques – Medias for colouring. Portfolio presentation – styles of presentation - Fashion shows.

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.

REFERENCES:

1. Sumathi, G.J. “**Elements of Fashion and Apparel Design**” New Age International Publishers, New Delhi.
2. Kathryn McKelvey “**Fashion Source Book**” Balckwell Publishing New Delhi.
3. Jane Mills and Janet K.Smith “**Design Concepts**” Fairchild Publications, New York.
4. Judith Rasband „**Wardrobe strategies for women**“, Delmar publishers, London.
5. Jeannette A.Jarnow, Mirianr Guerreiro & Beatrice Judelle, “**Inside the fashion business**” 4th edition Mac Millan Publishing Company, NewYork.

COURSE OUTCOMES

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

1. Explain the different types of pattern making method.
2. Explain the various seams, stitches, needle type and sewing thread.
3. Explain and apply the various garment accessories.
4. Explain and analyse the garment quality particulars and method of garment laundering.
5. Discuss and compare method of overall quality system 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)														
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CO1	3	2	3	3	2	3	2		2				3	3	2
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CO3	3	2	3	3	2	3	3		2				3	3	2
CO4	3	2	3	3	2	3	3		2				3	3	2
CO5	3	2	3	3	2	3	3		2				3	3	2

UNIT-I BASICS OF GARMENT TECHNOLOGY 9

Introduction: Anthropometry, Size standardization, mass customization, mass production flow chart.

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

UNIT II SEAMS, STITCHES, NEEDLE AND SEWING THREADS 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.

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 and other accessories, applications.

UNIT IV SEWING QUALITY PARAMETERS AND GARMENT LAUNDERING 9

Garment Inspection: Raw material, in process and final inspection, needle breakage, strength properties of apparel.

Laundering and Care Labelling: Dimensional changes in apparel due to laundering, dry cleaning, steaming and pressing, care labelling of apparel.

UNIT V QUALITY SYSTEM AND PACKING 9

Quality system and Sampling: Quality system (AQL), sampling techniques.

Garment pressing: Pressing types and its equipment.

Final Packing: Packing and special equipment used for packing.

TOTAL: 45 HOURS

TEXT BOOKS

1. RajkishoreNayak 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.

REFERENCES

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 2015R (CBCS)
Branch: Fashion Technology

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Practical							
1	U15FT801R	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