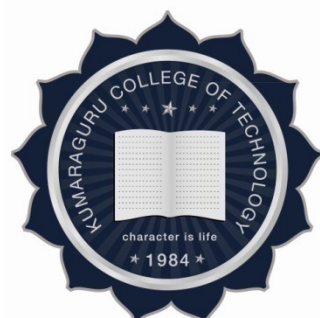


KUMARAGURU COLLEGE OF TECHNOLOGY,
An autonomous Institution affiliated to Anna University, Chennai
COIMBATORE – 641 049.

B.Tech., FASHION TECHNOLOGY
REGULATIONS 2018



CURRICULUM AND SYLLABI
I to VIII Semesters

Signature of BOS chairman, FT

Department of Fashion Technology

VISION

Achieve excellence in academics and research and face the challenges of fashion and clothing industry.

MISSION

- ❖ Develop core competencies with a curriculum encompassing design, manufacture, and management domains.
- ❖ Develop the competency of the faculty to the level of International repute through state-of-the-art infrastructure and facility, focus on research and up skilling.
- ❖ Stimulate analytical and creative thinking to transform the students as socially responsible, competent professionals, entrepreneurs, researchers useful to the society, through innovative teaching learning
- ❖ Promote collaborations with industry to comprehend global practices leading to excellence.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

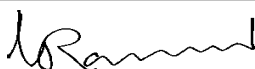
The Program Educational Objectives of Fashion Technology Undergraduate Program are to prepare the students:

- PEO I : Excel in their professional career related to fashion, design, manufacturing, management and research
- PEO II : Identify problems in the apparel domain and provide techno- economic solutions focusing on the need of the industry and society
- PEO III: Imbibe awareness on the significance of professional and social ethics in their professional career

PROGRAM OUTCOMES (POs)

Graduates of the Fashion Technology Undergraduate Program should have the ability to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.



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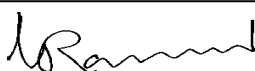
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

Graduates of the Fashion Technology Undergraduate Program will have the ability to:

PSO-1: Apply apparel domain knowledge to provide techno-economic solutions to industrial requirements

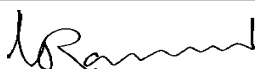
PSO-2: Develop sustainable and ethical apparel products and processes to meet the diversified needs of the apparel industry



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REGULATIONS 2018
B.Tech. FASHION TECHNOLOGY
CURRICULUM

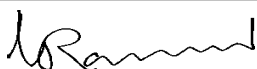
Semester I										Pre-requisite
S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C	
1	U18MAI1201	Linear Algebra and Calculus	Embedded - Theory & Lab	BS	3	0	2	0	4	Nil
2	U18ENI1201	Fundamentals of Communication -I	Embedded - Theory & Lab	HS	2	0	2	0	3	Nil
3	U18PHI1202	Engineering Physics	Embedded - Theory & Lab	BS	3	0	2	0	4	Nil
4	U18CSI1202	Problem Solving and Programming using C	Theory & Lab	ES	2	0	2	0	3	Nil
5	U18FTT1001	Fibre Science	Theory	PC	3	0	0	0	3	NIL
6	U18FTP1502	Fibre Analytical Laboratory	Lab	PC	0	0	2	0	1	NIL
7	U18INI1600	Engineering Clinic I	Project based course	ES	0	0	4	2	3	Nil
Total Credits									21	
Total Contact Hours/week									29	
Semester II										Pre-requisite
S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C	
1	U18MAI2201	Advanced Calculus and Laplace Transform	Embedded - Theory & Lab	BS	3	0	2	0	4	U18MAI1101
2	U18ENI2201	Fundamentals of Communication-II	Embedded - Theory & Lab	HS	2	0	2	0	3	U18ENI1201
3	U18CHI2201	Engineering Chemistry	Embedded - Theory & Lab	BS	3	0	2	0	4	NIL
4	U18CSI2201	Python Programming	Theory & Lab	ES	2	0	2	0	3	NIL
5	U18MEI2201	Engineering Graphics	Embedded - Theory & Lab	ES	2	0	2	0	3	NIL
6	U18MEP2501	Engineering Practices laboratory	Lab	ES	0	0	2	0	1	NIL
7	U18INI2600	Engineering Clinic II	Project based course	ES	0	0	4	2	3	Nil
Total Credits									21	
Total Contact Hours/week									30	



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Semester III										Pre-requisite
S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C	
1	U18EEI3206	Basic Electrical and Electronics Engineering	Embedded - Theory & Lab	ES	3	0	2	0	4	Nil
2	U18FTT3001	Yarn Technology	Theory	PC	3	0	0	0	3	U18FTT1001
3	U18FTI3202	Concepts of Fashion and Design	Embedded - Theory & Lab	PC	3	0	2	0	4	Nil
4	U18FTT3003	Pattern making and Adaptation	Theory	PC	3	0	0	0	3	Nil
5	U18FTI3204	Garment Components Fabrication	Embedded - Theory & Lab	PC	3	0	2	0	4	Nil
6	U18INI3600	Engineering Clinic III	Project based course	ES	0	0	4	2	3	Nil
Total Credits									21	
Total Contact Hours/week									27	

Semester IV										Pre-requisite
S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C	
1	U18MAT4102	Numerical Methods	Theory and Tutorial	BS	3	1	0	0	4	Nil
2	U18MET4007	Basics of Mechanical Engineering	Theory	ES	3	0	0	0	3	NIL
3	U18FTT4001	Fabric Formation Technology	Theory	PC	3	0	0	0	3	U18FTT1001
4	U18FTT4002	Apparel Machinery and Equipment	Theory	PC	3	0	0	0	3	NIL
5	U18FTI4203	Apparel Design and Development	Embedded - Theory & Lab	PC	3	0	2	0	4	U18FTI3204
6	U18FTI4204	Fabric Structure and Design	Embedded - Theory & Lab	PC	3	0	2	0	4	U18FTT3001
7	U18INI4600	Engineering Clinic IV	Project based course	ES	0	0	4	2	3	Nil
Total Credits									24	
Total Contact Hours/week									29	

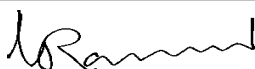


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*Industrial training to be undertaken during the 4th Semester summer vacation –Internal evaluation

Semester V										Pre-requisite
S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C	
1	U18MAT5102	Probability and Statistics	Theory and Tutorial	BS	3	1	0	0	4	Nil
2	U18FTI5201	Textile Chemical Processing	Embedded - Theory & Lab	PC	3	0	2	0	4	Nil
3	U18FTI5202	Textile and Apparel Quality Evaluation	Embedded - Theory & Lab	PC	3	0	2	0	4	Nil
4	U18FTT5003	Knitting Technology	Theory	PC	3	0	0	0	3	Nil
5	U18OE....	Open Elective I	Theory	OE	3	0	0	0	3	Nil
6	U18FTP5504	Apparel Production Lab	Lab	PC	0	0	2	0	1	U18FTI4203
7	U18FTP5505	Industrial Training *	Industry	PC	0	0	2	0	1	NIL
8	U18INI5600	Engineering Clinic V	Project based course	ES	0	0	4	2	3	Nil
Total Credits									23	
Total Contact Hours/week									30	

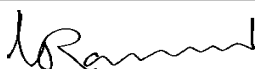
Semester VI										Pre-requisite
S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C	
1	U18FTT6001	Apparel Production Planning and Control	Theory	PC	3	0	0	0	3	Nil
2	U18FTT6002	Apparel Merchandising and Cost Management	Theory	PC	3	0	0	0	3	Nil
3	U18FTT6003	Industrial Engineering in Apparel Industry	Theory	PC	3	0	0	0	3	Nil
4	U18FTE....	Programme Elective I	Theory	PE	3	0	0	0	3	Nil
5	U18OE....	Open Elective II	Theory	OE	3	0	0	0	3	Nil
6	U18FTE...	Programme Elective II	Theory	PE	3	0	0	0	3	Nil
7	U18FTP6504	Apparel CAD lab	Lab	PC	0	0	2	0	1	Nil
8	U18FTP6505	Portfolio Presentation I	Lab	PC	0	0	2	0	1	U18FTI4203
Total Credits									20	
Total Contact Hours/week									22	



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Semester VII										Pre-requisite
S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C	
1	U18FTT7001	Apparel Brand Management	Theory	PC	3	0	0	0	3	Nil
2	U18FTT7002	Apparel Retail Management	Theory	PC	3	0	0	0	3	Nil
3	U18FTE....	Programme Elective III	Theory	PE	3	0	0	0	3	Nil
4	U18FTE....	Programme Elective IV	Theory	PE	3	0	0	0	3	Nil
5	U18FTP7503	Portfolio Presentation II	Lab	PC	0	0	2	0	1	U18FTP6505
6	U18FTP7701	Project -Phase I	Project only Course	PW	0	0	0	6	3	Nil
Total Credits									16	
Total Contact Hours/week									20	

Semester VIII										Pre-requisite
S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C	
1	U18FTP8701	Project-Phase II	Project only Course	PW	0	0	0	24	12	U18FTP7701
Total Credits									12	
Total Contact Hours/week									24	



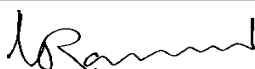
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List of Mandatory Courses

S.No	Couse Code	Course Title	Course Mode	CT	Sem
1	U18VEP1501	Human Excellence -Personal Values	Lab	HS	1
2	U18VEP2502	Human Excellence-Inter Personal values	Lab	HS	2
3	U18VEP3503	Human Excellence-Family Values	Lab	HS	3
4	U18CHT3000	Environmental Science and Engineering	Theory	MC	3
5	U18VEP4504	Human Excellence-Professional Values	Lab	HS	4
6	U18IST4000	Constitution of India	Theory	MC	4
7	U18VEP5505	Human Excellence-Social Values	Lab	HS	5
8	U18VEP6506	Human Excellence-National Values	Lab	HS	6
9	U18VEP7507	Human Excellence-Global Values	Lab	HS	7

Programme Electives

S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C
Fashion designing									
1	U18FTE0001	Apparel Product Development	Theory	PE	3	0	0	0	3
2	U18FTE0002	Surface Ornamentation	Theory	PE	3	0	0	0	3
3	U18FTE0003	Visual Merchandising	Theory	PE	3	0	0	0	3
4	U18FTE0004	Fashion Boutique Management	Theory	PE	3	0	0	0	3
5	U18FTE0005	Traditional Indian Textiles and Crafts	Theory	PE	3	0	0	0	3

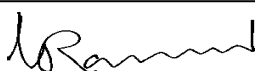


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6	U18FTE0006	Intimate Apparels	Theory	PE	3	0	0	0	3
Apparel Technology									
1	U18FTE0007	Clothing science for Apparel Engineering	Theory	PE	3	0	0	0	3
2	U18FTE0008	Apparel Finishing and Care	Theory	PE	3	0	0	0	3
3	U18FTE0009	Functional Clothing	Theory	PE	3	0	0	0	3
4	U18FTE0010	ERP and MIS in Apparel Industry	Theory	PE	3	0	0	0	3
5	U18FTE0011	Home Furnishings	Theory	PE	3	0	0	0	3
6	U18FTE0012	Garment Trims and Accessories	Theory	PE	3	0	0	0	3
Apparel Management									
1	U18FTE0013	Fashion Marketing	Theory	PE	3	0	0	0	3
2	U18FTE0014	Social Compliance in Apparel industry	Theory	PE	3	0	0	0	3
3	U18FTE0015	Global Marketing and Sourcing Strategies	Theory	PE	3	0	0	0	3
4	U18FTE0016	Logistics and Supply chain Management	Theory	PE	3	0	0	0	3
5	U18FTE0017	Apparel Export Management	Theory	PE	3	0	0	0	3
6	U18FTE0018	Entrepreneurship Development	Theory	PE	3	0	0	0	3

LIST OF ONE CREDIT COURSES

S.No	Course Code	Course Title
1	U18FTC0001	Computer Aided Textile and Apparel Designing
2	U18FTC0002	Draping Techniques
3	U18FTC0003	Sewing Machinery Dynamics

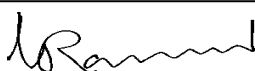


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4	U18FTC0004	Developments in Sewing Machinery
5	U18FTC0005	New Trends in Printing
6	U18FTC0006	Application of Six Sigma in Apparel Manufacture
7	U18FTC0007	Waste Elimination and Value Stream Mapping In Apparel Industry
8	U18FTC0008	Certification Procedures for Product And Process in Apparel Industry
9	U18FTC0009	Statistical Analysis in the Apparel Industry
10	U18FTC0010	Flat sketch and design sheet development
11	U18FTC0011	Sourcing sustainable fashion
12	U18FTC0012	Leather garments
13	U18FTC0013	Natural dyes
14	U18FTC0014	Introduction to industry 4.0
15	U18FTC0015	E- Marketing
16	U18FTC00.....	

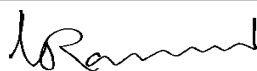
LIST OF OPEN ELECTIVE COURSES

Sl.No	Course Code	Course Name
1	U18FTO0001	Fashion Photography
2	U18FTO0002	Textile Arts and Crafts
3	U18FTO0003	Home Furnishing and Decoration for Beginners
4	U18FTO0004	Creative Art and Crafts
5	U18FTO0.....	



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SEMESTER I



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U18MAI1201

LINEAR ALGEBRA AND CALCULUS
(Common to All branches)

L	T	P	J	C
3	0	2	0	4

Course Outcomes:

After successful completion of this course, the students should be able to:

- CO1: Identify eigenvalues and eigenvectors and apply Cayley Hamilton theorem.
 CO2: Apply orthogonal diagonalisation to convert quadratic form to canonical form.
 CO3: Solve first order ordinary differential equations and apply them to certain physical situations.
 CO4: Solve higher order ordinary differential equations.
 CO5: Evaluate the total derivative of a function, expand the given function as series and locate the maximum and minimum for multivariate function.
 CO6: Determine Rank, Inverse, Eigenvalues, Eigenvectors of the given matrix, Maxima-Minima of the function and Solving Differential equations using MATLAB

Pre-requisite:

1 NIL

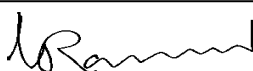
CO-PO/PSO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1:	S	S			M				M	M		M		
CO2:	S	S			M				M	M		M		
CO3:	S	S			M				M	M		M		
CO4:	S	S			M				M	M		M		
CO5:	S	S			M				M	M		M		
CO6:	S	S			M				M	M		M		

Course Assessment methods:

Direct		Indirect	
1	Continuous Assessment Test I, II (Theory component)	1	Course Exit Survey
2	Open Book Test; Cooperative Learning Report, Assignment; Journal Paper Review, Group Presentation, Project Report, Poster Preparation, Prototype or Product		
3	Demonstration etc (as applicable) (Theory component)		
4	Pre/Post - Experiment Test/Viva; Experimental Report for each Experiment (lab Component)		
5	Model Examination (lab component)		
6	End Semester Examination (Theory and lab components)		

THEORY COMPONENT**MATRICES****L: 6 Hrs**


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Rank of a matrix – Consistency of a system of linear equations - Rouché's theorem - Solution of a system of linear equations - Linearly dependent and independent vectors– Eigenvalues and Eigenvectors of a real matrix – Properties of eigenvalues and eigenvectors – Cayley Hamilton theorem (excluding proof)

DIAGONALISATION OF A REAL SYMMETRIC MATRIX

L: 6 Hrs

Orthogonal matrices – Orthogonal transformation of a symmetric matrix to diagonal form – Reduction of quadratic form to canonical form by orthogonal transformation.

FIRST ORDER ORDINARY DIFFERENTIAL EQUATIONS

L: 11 Hrs

Leibnitz's equation – Bernoulli's equation – Equations of first order and higher degree - Clairaut's form – Applications: Orthogonal trajectories.

HIGHER ORDER LINEAR DIFFERENTIAL EQUATIONS

L: 11 Hrs

Linear equations of second and higher order with constant coefficients – Euler's and Legendre's linear equations – Method of variation of parameters – First order Simultaneous linear equations with constant coefficients – Applications.

FUNCTIONS OF SEVERAL VARIABLES

L: 11 Hrs

Total derivative – Taylor's series expansion – Maxima and minima of functions of two variables – Constrained maxima and minima: Lagrange's multiplier method with single constraints – Jacobians.

Practical

List of MATLAB Programmes:

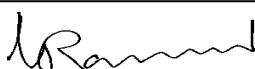
P: 30 Hrs

- 1 Introduction to MATLAB.
- 2 Matrix Operations - Addition, Multiplication, Transpose, Inverse
- 3 Rank of a matrix and solution of a system of linear equations
- 4 Characteristic equation of a Matrix and Cayley-Hamilton Theorem.
- 5 Eigenvalues and Eigenvectors of Higher Order Matrices
- 6 Curve tracing
- 7 Solving first order ordinary differential equations.
- 8 Solving second order ordinary differential equations.
- 9 Determining Maxima and Minima of a function of one variable.
- 10 Determining Maxima and Minima of a function of two variables.

Theory : 45 Hrs	Practical: 30 Hrs	Total Hours: 75
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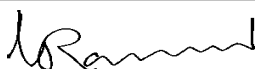
References:

- 1 Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 41st Edition, 2011.
- 2 RamanaB.V., "Higher Engineering Mathematics", Tata McGraw Hill Co. Ltd., New Delhi, 11th Reprint, 2010.
- 3 Kreyzig E., "Advanced Engineering Mathematics", Tenth Edition, John Wiley and sons, 2011.
- 4 Veerarajan T., Engineering Mathematics (for First Year), Tata McGraw Hill Pub. Co. Ltd., New Delhi, Revised Edition, 2007
- 5 Kandasamy P., Thilagavathy K., and Gunavathy K., "Engineering Mathematics", S. Chand & Co., New Delhi, (Reprint) 2008



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- 6 Venkataraman M.K., "Engineering Mathematics", The National Pub. Co., Chennai, 2003
- 7 Weir, MD, Hass J, Giordano FR: Thomas' Calculus, Pearson education 12th Edition, 2015
- 8 P.Bali., Dr. Manish Goyal., Transforms and partial Differential equations, University Science Press, New Delhi, 2010
- 9 G.B.Thomas and R.L.Finney, Calculus and analytical geometry, 11th Edition, Pearson Education, (2006)



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U18ENI1201 – FUNDAMENTALS OF COMMUNICATION-I

L	T	P	J	C
2	0	2	0	3

(Common to all Branches of I Semester B.E/B/Tech Programmes)

Course Objectives:

1. To communicate effectively by using appropriate grammar and technical parlance in a range of academic scenarios.
2. To interpret and critically evaluate discourses related to functional English.
3. To disseminate professional information through appropriate means of communication.

Course Outcomes:

After the course the student will be able to:

CO1: Communicate in English with correct grammar

CO2: Communicate effectively (Oral and Written)

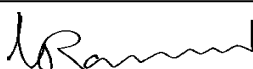
CO3: Use communication skills in the real world

Assessment Methods:

Direct
<ol style="list-style-type: none"> 1. Continuous Assessment of Skills 2. Assignment 3. Written Test 4. End Semester Examination
Indirect
<ol style="list-style-type: none"> 1. Course-end survey

CO/PO Mapping:

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO1										S		S		
CO2		M		W		W			M	S		S		
CO3		M		M		W			M	S		S		

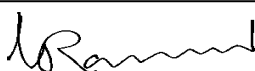


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No	Topic	Hours
MODULE I - 12 Hrs		
1.1	Parts of Speech	2
1.2	Subject Verb Agreement	2
1.3	Speak up (Self Introduction, JAM)	4
1.4	Writing sentences using 'Be-forms'	3
1.5	Test	1
MODULE II - 12Hrs		
2.1	Articles, Gerunds, Infinitives	2
2.2	Speak up (Greetings & Polite English)	4
2.3	Dialogue Writing	3
2.4	Skimming & Scanning	2
2.5	Listening Skills – I	1
MODULE III - 12 Hrs		
3.1	Tenses & Voice	2
3.2	Sentences & its kinds	2
3.3	Speak up (Narration & Description)	4
3.4	Summarizing & Note-making	3
3.5	Listening Skills – II	1
MODULE IV - 12 Hrs		
4.1	Framing Questions – 4 types	2
4.2	Speak up (Role play)	4
4.3	Letter writing – Formal and Informal & Email Writing	3
4.4	Reading Comprehension & Cloze test	2
4.5	Listening Skills – III	1
MODULE V - 12 Hrs		
5.1	Degrees of Comparison	2
5.2	Clauses	2
5.3	Speak up (Power Point Presentation)	4
5.4	Writing (Picture perception)	3
5.5	Test	1
Total		60

Reference:

1. A Modern Approach to Non Verbal Reasoning (English, Paperback, Dr. R S Aggarwal)
2. The Power of Words(Bloomsbury, UK, 2012, Hyacinth Pink)
3. Word Power Made Easy: The Complete Handbook for Building a Superior Vocabulary (By Norman Lewis)
4. Effective Technical Communication Tata McGraw Hills Publications (Ashraf Rizvi)
5. English and Soft skills Orient Black Swan Publishers (S. P. Dhanavel)
6. Know Your Grammar: Trans.in Tamil & Malayalam –A Bilingual Approach (Bloomsbury, UK, 2012, Hyacinth Pink)



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U18PHI1202 – ENGINEERING PHYSICS
(Common to All B.E., B.Tech.)

L	T	P	J	C
3	0	2	0	4

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Enhance the fundamental knowledge in properties of matter and its real time applications relevant to various streams of Engineering and Technology.

CO2: Understand the phenomenon of heat and its transfer mechanism in engineering systems.

CO3: Acquire essential knowledge in the concepts of quantum mechanics and its impact on electron microscopy.

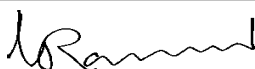
CO4: Analyse the concept of lasers, optical fibres, and their importance in diverse fields of engineering.

CO5: Apply the principles of acoustic and ultrasonic techniques for engineering practice.

CO6: Gain practical knowledge about the use of physics principles in a right way to implement modern technology.

Pre-requisites :

High School Education



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CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes (POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S										M
CO2	S	M	M									S
CO3	S	M										
CO4	S	S	M	M								S
CO5	S			M								M
CO6	M	S							M			S

Course Assessment methods

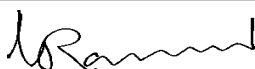
Direct
<ol style="list-style-type: none"> 1. Continuous Assessment Test I, II (Theory component) 2. Video presentation, Group activities, Project report, E-Poster preparation, 3. Pre/Post - experiment Test/Viva; Experimental Report for each experiment (Lab component) 4. Model examination (Lab component) 5. End Semester Examination (Theory and Lab component)
Indirect
<ol style="list-style-type: none"> 1. Course-end survey

Theory Component contents

. 1. PROPERTIES OF MATTER

9 Hours

Hooke's Law - Elastic moduli - Relation between elastic constants - Poisson's Ratio – Stress - Strain Diagram and its uses – factors affecting elastic modulus – Bending of beams – Expression for bending moment and depression - Cantilever - Depression of a cantilever -



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experimental determination of Young's modulus by Non uniform bending – I shape girders.

2. THERMAL PHYSICS

9 Hours

Transfer of heat energy – conduction, convection and radiation – thermal expansion of solids and liquids – expansion joints – bimetallic strips – theory of heat conduction in solids – rectilinear flow of heat – determination of thermal conductivity of a bad conductor - Lee's & Charlton's disc method - Thermal Insulation – classification and properties – heat exchangers - applications – domestic refrigerator – microwave oven.

3. MODERN PHYSICS

9 Hours

Planck's concept (hypothesis) - Compton effect - Expression for Compton shift (Theory and Experiment) - Concept of matter waves - Physical significance of wave function - Schrödinger's wave equation - Time independent and time dependent equation - Eigen values and Eigen function - Particle in a box (one dimension) - Scanning Electron Microscope (SEM) - Transmission Electron Microscope (TEM).

4. APPLIED OPTICS

9 Hours

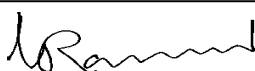
LASERS: Absorption and emission - Spontaneous emission - Stimulated emission - Population inversion - Sources of excitation - Active medium - Resonant cavity - Einstein's theory of stimulated emission - Nd-YAG laser - CO₂ laser - Semiconductor lasers - Applications – holography, cutting, welding and drilling.

FIBER OPTICS: Structure of optical fibre - principle and propagation of light in optical fibres - Numerical aperture and acceptance angle - Types of optical fibres (material, refractive index, mode) – Applications - fibre optic communication system, fibre endoscope.

5. ACOUSTICS AND ULTRASONICS

9 Hours

ACOUSTICS: Classification of sound – characteristics of musical sound –loudness –Weber-Fechner law –decibel - Reverberation - Reverberation time - Sabine's formula (Derivation) -



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Absorption coefficient and its determination - Factors affecting the acoustics of the buildings and their remedies.

ULTRASONICS: Production of ultrasonic waves - Magnetostriction and Piezoelectric methods - Properties - Detection - Thermal and Kundt's tube methods, Determination of velocity of ultrasonic waves in liquids using acoustic grating – application - A, B, C- scan.

Theory: 45	Tutorial: 0	Practical: 0	Project: 0	Total: 45 Hours
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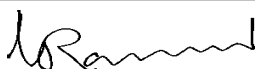
Lab component Contents:

LIST OF EXPERIMENTS

1. Non-uniform bending – Determination of Young's modulus
2. Compound pendulum – Determination of acceleration due to gravity
3. Spectrometer – Determination of wavelength of mercury source using grating
4. Air wedge - Determination of thickness of thin sheet
5. Semiconductor laser:
 - a. Determination of wavelength of laser
 - b. Determination acceptance angle and numerical aperture of an optical fibre.
 - c. Determination of particle size
6. Melde's string – Determination of frequency of a tuning fork
7. Determination of band gap of a semiconductor
8. Determination of efficiency of solar cell
9. Determination of thermal conductivity of a bad conductor – Lee's Disc method
10. Determination of magnetic susceptibility of a solid material – B-H curve apparatus

Experiments for Demonstration:

1. Hall effect
2. Spin coating unit for thin film fabrication
3. Four probe experiment
4. Ultrasonic interferometer – Determination of velocity of sound and compressibility of a liquid



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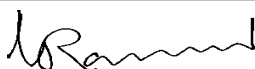
Theory: 0	Tutorial: 0	Practical: 30	Project: 0	Total: 30 Hours
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Textbook:

1. A textbook of Engineering Physics, M N Avadhanulu, P.G. Kshirsagar and TVS Arun Murthy, S. Chand Publications 11th edition, 2018.
2. Concepts of Modern Physics, Arthur Beiser, Shobhit Mahajan, S. Rai Choudhury, 7th Edition, Mc-Graw Hill Education, New Delhi, 2017.
3. Engineering Physics, G. Senthil Kumar, VRB Publishers Ltd., Chennai. 2018.

Reference books:

1. Properties of matter, Brij Lal and Subrahmanyam, S. Chand & Co Ltd., New Delhi, 2014.
2. Heat Thermodynamics and Statistical Physics, Brij Lal & Subrahmanyam, S. Chand & Co Ltd, New Delhi, 2012.
3. Quantum Mechanics, Satya Prakash, Pragati Prakashan Publishers, 2015.
4. Lasers: Fundamentals and Applications, Springer Science & Business Media, K. Thiagarajan, Ajoy Ghatak, 2010.
5. Introduction to Fibre Optics, K. Thyagarajan, Ajoy Ghatak, Second Edition, Springer New York Dordrecht Heidelberg London, 2010.
6. Ultrasonics: Fundamentals, Technology, Applications, Second Editon, Marcel Dekker, New York, 1988.
7. Practical Physics and Electronics, C. C. Ouseph, U. J. Rao, V. Vijayendran S. Viswanathan (Printers & Publishers), Pvt., Ltd. 2009
8. Laboratory Manual of Engineering Physics, Dr. Y. Aparna & Dr. K. Venkateswara Rao, V.G.S Publishers. 2015



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U18CSI1202

PROBLEM SOLVING AND PROGRAMMING USING C

L	T	P	J	C
2	0	2	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on different problem solving techniques.

CO2: Use appropriate data types and control structures for solving a given problem.

CO3: Execute different array and string operations.

CO4: Experiment with the usage of pointers and functions.

CO5: Organize data using structures and unions.

Pre-requisites : Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	M							L				S	
CO2	S	M							L	L			S	
CO3	S	L			L	L			L	L		L	S	
CO4	M	L	M	L	L	L			L	L		M	S	
CO5	M	L	M	L	L	L			L	L		M	S	

Course Assessment methods

Direct
1. Continuous Assessment Test
2. Assignment
3. End Semester Examination

THEORY COMPONENT CONTENTS

STRUCTURED PROGRAMMING

6 Hours

Algorithms, building blocks of algorithms (instructions/statements, state, control flow, functions), notation (pseudo code, flow chart, programming language), algorithmic problem solving, simple strategies for developing algorithms (iteration). Introduction to C Programming – Operators and Expressions – Data Input and Output – Control Statements.

ARRAYS AND STRINGS

6 Hours

Defining an array – Processing an array –Multidimensional Arrays Character Arithmetic – Defining a string – Initialization of Strings – Reading and Writing Strings – Processing Strings –Searching and Sorting of Strings

FUNCTIONS, STORAGE CLASSES

6 Hours

Defining a function – Accessing a function – Function prototypes – Passing arguments to a function – Passing arrays to functions – Function with string - Recursion – Storage classes



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POINTERS**7 Hours**

Pointer Fundamentals – Pointer Declaration – Passing Pointers to a Function – Pointers and one dimensional arrays – operations on pointers– Dynamic memory allocation.

STRUCTURES AND UNIONS**5 Hours**

Structures and Unions: Defining a Structure – Processing a Structure – User defined data types (Typedef) – Unions

Theory: 30 Hours	Tutorial: 0	Practical: 0	Project: 0	Total: 30 Hours
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REFERENCES

1. Byron S Gottfried and Jitendar Kumar Chhabra, “Programming with C”, Tata McGraw Hill Publishing Company, Third Edition, New Delhi, 2011.
2. PradipDey and Manas Ghosh, “Programming in C”, Second Edition, Oxford University Press, 2011.
3. Kernighan,B.W and Ritchie,D.M, “The C Programming language”, Second Edition, Pearson Education, 2006
4. Ashok N. Kamthane, “Computer programming”, Pearson Education, 2007.
5. ReemaThareja, “Programming in C”, Second Edition, Oxford University Press, 2011.

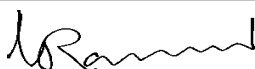
LAB COMPONENT CONTENTS**LIST OF EXPERIMENTS**

1. Writing algorithms, flowcharts and pseudo codes for simple problems.
2. Programs on expressions and conversions
3. Programs using if, if-else, switch and nested if statements
4. Programs using while, do-while, for loops
5. Programs on one dimensional arrays, passing arrays to functions and array operations
6. Programs using two dimensional arrays, passing 2D arrays to functions
7. Programs using String functions
8. Programs using function calls, recursion, call by value
9. Programs on pointer operators, call by reference, pointers with arrays
10. Programs using structures and unions.

Theory: 0	Tutorial: 0	Practical: 30 Hours	Project: 0	Total: 30 Hours
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REFERENCES

1. Byron S Gottfried and Jitendar Kumar Chhabra, “Programming with C”, Tata McGraw Hill Publishing Company, Third Edition, New Delhi, 2011.
2. PradipDey and Manas Ghosh, “Programming in C”, Second Edition, Oxford University Press, 2011.
3. Kernighan,B.W and Ritchie,D.M, “The C Programming language”, Second Edition, Pearson Education, 2006
4. Ashok N. Kamthane, “Computer programming”, Pearson Education, 2007.



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U18FTT1001**FIBRE
SCIENCE**

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Recognize the Essential and desirable properties of fibres

CO2: Understand the Cultivation of Natural fibres

CO3: Understand the production of Man – made fibres

CO4: Understand the Properties of natural, man-made fibres

CO5 : Understand the Properties and application of specialty fibres

CO6: Application of the properties to Identify different natural and man-made fibres

Pre-requisites : NIL

CO s	CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak													
	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO1	S												S	S
CO2	S												S	S
CO3	S												S	S
CO4	S												S	S
CO5	S												S	S
CO6		S											S	

Course Assessment methods

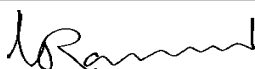
Direct
1. Continuous Assessment Test I, II (Theory component)
2. Open Book Test; Cooperative Learning Report, Assignment; Journal Paper Review, Group Presentation, Project Report, Poster Preparation, Prototype or Product Demonstration etc (as applicable) (Theory component)
3. End Semester Exam
Indirect
1. Course-end survey

INTRODUCTION TO TEXTILE FIBRES**10 hours**

Definition of various forms of textile fibres - staple fibre, filament, bicomponent fibres. Classification of Natural and Man-made fibres, essential and desirable properties of Fibres. Introduction to fibre linear density and strength - units of measurements. Production and cultivation of Natural Fibers: Cotton, Silk, Wool, Flax, Jute -Physical and chemical structure of the above fibres.

MANUFACTURED FIBRES**9 hours**

Production Sequence of Regenerated Cellulosic fibres: Viscose Rayon, Acetate rayon – High wet modulus fibres: Modal and Lyocel -.Production Sequence of Synthetic Fibers: Polyester,



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Nylon and Acrylic. Introduction to spin finishes and texturisation.

BASIC FIBRE PROPERTIES

8 hours

Physical (Tensile, Moisture, Density), Chemical, Biological, Thermal and Optical Properties of the above Natural, and manufactured fibres.

SPECIALITY FIBRES

9 hours

Properties and end uses of high tenacity and high modulus fibres, high temperature and flame retardant fibres, elastomeric fibres, PLA fibre, ultra-fine fibres, nano-fibres, metallic fibres – Gold and Silver coated; Super-absorbent fibres for medical and hygiene applications.

IDENTIFICATION OF TEXTILE FIBERS

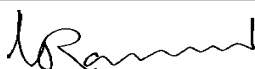
9 hours

Appearance (Microscopic view, Colour), Solubility, density and Burning tests.

Theory: 45	Tutorial: 0	Practical: 0	Project: 0	Total: 45 hours
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REFERENCES

1. Mishra S.P., "Fibre Science & Technology", New Age International Publishers, 2000.
2. Morton, W.E and Hearle, J.W.S., "Physical Properties of Textile Fibres", The Textile Institute, Manchester, U.K., 1993.
3. Muthopadhyay S.K., "Advances in Fibre Science", The Textile Institute, UK 1992.
4. Collier. B and Tortora.P, "Understanding Textiles", Edition 6, Prentice Hall, 2001.
5. Gupta V.B., "Textile Fibres: Developments and Innovations", Vol. 2, Progress in Textiles: Science & Technology, Edited by V.K. Kothari, IAFL Publications, 2000.
6. Corbman B.P., "Textiles: Fibre to Fabric", McGraw Hill International Edn, 1983



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U18FTP1502 FIBRE ANALYTICAL LABORATORY

L	T	P	J	C
0	0	2	0	1

Course Outcomes

After successful completion of this course, the students should be able to

CO1:Ability to identify the given fibre by microscopical examination (K₃)

CO2:Ability to identify the given fibre by solubility Test (K₃)

CO3:Ability to identify the given fibre by Flammability Test (K₃)

CO4:Ability to identify cotton and viscose by alkali swelling Test (K₃)

CO5:Acquire Skill to determine the blend proportion(K₃)

CO6:Acquire Skill to determine the fibre physical properties(K₃)

Pre-requisites : NIL

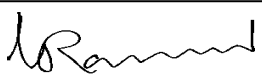
CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	S											S	S
CO2	S	S											S	S
CO3	S	S											S	S
CO4	S	S											S	S
CO5	S	S											S	S
CO6	S	S											S	S

Course Assessment methods

Direct	Indirect
1. Regular Laboratory experiment Group work 2. Internal tests 3. End Semester Exam	1. Course Exit Survey

List of Experiments

30 Hours

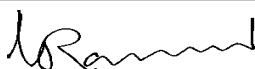

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1. Study of longitudinal view of natural and synthetic fibres
2. Study of cross-sectional view of natural and synthetic fibres
3. Identification of fibres through flammability tests
4. Identification of fibres through solubility tests
5. Determination of fibre density
6. Study of swelling behavior of cotton and viscose in alkaline solution
7. Determination of blend proportion of blends
8. Determination of moisture regain of fibres
9. Determination of fineness of fibre
10. Estimation of Trash cotton in cotton fibre
11. Determination of fibre strength and elongation.
12. Determination of fibre length

Theory: 0 Tutorial: 0 Practical: 30 Project: 0 Total: 30 Hours

REFERENCES

1. Mishra S.P., "Fibre Science & Technology", New Age International Publishers, 2000.
2. Morton, W.E and Hearle, J.W.S., "Physical Properties of Textile Fibres", The Textile Institute, Manchester, U.K., 1993.
3. Muthopadhyay S.K., "Advances in Fibre Science", The Textile Institute, UK 1992.
4. Gupta V.B., "Textile Fibres: Developments and Innovations", Vol. 2, Progress in Textiles: Science & Technology, Edited by V.K. Kothari, IAFL Publications, 2000.



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U18INI1600**ENGINEERING
CLINIC – I**

L	T	P	J	C
0	0	4	2	3

Course objectives

- To help the students look into the functioning of simple to complex devices and systems
- To enable the students to design and build simple systems on their own
- To help experiment with innovative ideas in design and team work
- To create an engaging and challenging environment in the engineering lab

Course Outcomes

After successful completion of this course, the students should be able to:

CO1: Identify a practical problems and find a solution

CO2: Understand the project management techniques

CO3: Demonstrate their technical report writing and presentation skills

Pre-requisite:

1. Nil

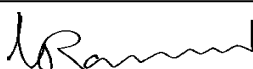
CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	S	S	S	S	M	W		S			S		
CO2											S			
CO3										S				

Course Assessment methods:

Direct	Indirect
1. Project reviews 50%	1. Course Exit Survey
2. Workbook report 10%	
3. Demonstration& Viva-voce 40%	

Content:

The course will offer the students with an opportunity to gain a basic understanding of computer controlled electronic devices and apply the concepts to design and build simple to complex devices. As a practical project based embedded course, the students will be taught the concepts using a variety of reference material available in the public domain. While the course will start with formal instruction on hardware, programming and applications, the major portion of the course will provide the students with ample opportunity to be innovative in designing and building a range of products from toys to robots and flying machines. In the I semester, students will focus primarily on IOT with C programming using Audino.

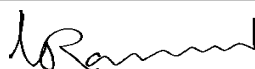


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GUIDELINES:

1. Practical based learning carrying credits.
2. Multi-disciplinary/ Multi-focus group of 5-6 students.
3. Groups can select to work on a specific tasks, or projects related to real world problems.
4. Each group has a faculty coordinator/Instructor who will guide/evaluate the overall group as well as individual students.
5. The students have to display their model in the 'Engineering Clinics Expo' at the end of semester.
6. The progress of the course is evaluated based on reviews and final demonstration of prototype.

Total Hours: 90



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U18VEP1501**PERSONAL VALUES**

(Mandatory)

L	T	P	J	C
0	0	2	0	0

Course Outcomes

After successful completion of this course, the students should be able to

CO 1: Become an individual in knowing the self

CO 2: Acquire and express Gratitude, Truthfulness, Punctuality, Cleanliness & fitness.

CO 3: Practice simple physical exercise and breathing techniques

CO 4: Practice Yoga asana which will enhance the quality of life.

CO 5: Practice Meditation and get benefited.

CO 6: Procure Self Healing techniques for propagating healthy society

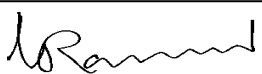
Pre-requisites : NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												M
CO2										S		
CO3						M						
CO4						S			M			
CO5										M		
CO6								W				S

Course Assessment methods

Direct
1. Group Activity / Individual performance and assignment 2. Assessment on Value work sheet / Test
Indirect
1. Mini project on values / Goodwill Recognition

Values through Practical activities:


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1. Knowing the self : Introduction to value education - Need & importance of Value education – Knowing the self – realization of human life – animal instinct vs sixth sense.

2. Mental Health : Evolution of senses – functioning steps of human mind – Body and Mind coordination - Analysis of thoughts – moralization of desires– autosuggestions – power of positive affirmations. – Meditation and its benefits.

3. Physical Health: Physical body constitution– Types of food - effects of food on body and mind – healthy eating habits – food as medicine– self healing techniques.

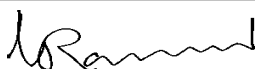
4. Core value : Self love& Self care Gratitude - Happiness - Optimistic –Enthusiasm – Simplicity – Punctual - Self Control - Cleanliness & personal hygiene - Freedom from belief systems.

5. Fitness: Simplified physical exercises – Sun salutation - Lung strengthening practices: Naadisuddhi pranayama – Silent sitting and listening to nature – Meditation.

Workshop mode

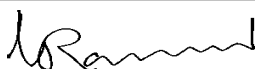
REFERENCES

1. KNOW YOURSELF — SOCRATES – PDF format at www.au.af.mil/au/awc/awcgate/army/rotc_self-aware.pdf
2. STEPS TO KNOWLEDGE: The Book of Inner Knowing – PDF format at www.newmessage.org/wp-content/uploads/pdfs/books/STK_NKL_v1.5.pdf
3. PROMOTING MENTAL HEALTH - World Health Organization – PDF format at www.who.int/mental_health/evidence/MH_Promotion_Book.pdf
4. LEARNING TO BE: A HOLISTIC AND INTEGRATED APPROACH TO VALUES – UNESCO PDF format at www.unesdoc.unesco.org/images/0012/001279/127914e.pdf
5. PERSONALITY DEVELOPMENT By SWAMI VIVEKANANDA www.estudentdavedanta.net/Personality-Development.pdf



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SEMESTER II



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**U18MAI2201ADVANCED CALCULUS AND LAPLACE
TRANSFORMS(Common to All branches)
COURSE OUTCOMES**

L	T	P	J	C
3	0	2	0	4

After successful completion of this course, the students should be able to

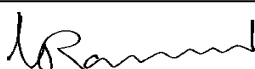
- CO1:** Evaluate double and triple integrals in Cartesian coordinates and apply them to calculate area and volume.
- CO2:** Apply various integral theorems for solving engineering problems involving cubes and rectangular parallelepipeds.
- CO3:** Construct analytic functions of complex variables and transform functions from z-plane to w-plane and vice-versa, using conformal mappings.
- CO4:** Apply the techniques of complex integration to evaluate real and complex integrals over suitable closed paths or contours.
- CO5:** Solve linear differential equations using Laplace transform technique.
- CO6:** Determine multiple integrals, vector differentials, vector integrals and Laplace transforms using MATLAB.

Pre-requisites: Nil

CO/PO MAPPING (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	PROGRAMME OUTCOMES (POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S			M				M	M		M
CO2	S	S			M				M	M		M
CO3	S	S			M				M	M		M
CO4	S	S			M				M	M		M
CO5	S	S			M				M	M		M

COURSE ASSESSMENT METHODS

DIRECT
<ol style="list-style-type: none"> 1. Continuous Assessment Test I, II (Theory component) 2. Open book test; Cooperative learning report, Assignment; Journal paper review, Group Presentation, Project report, Poster preparation, Prototype or Product Demonstration etc (as applicable) (Theory component) 3. Pre/Post - experiment Test/Viva; Experimental Report for each experiment (lab component) 4. Model examination (lab component) 5. End Semester Examination (Theory and lab component)
INDIRECT
<ol style="list-style-type: none"> 1. Course-end survey



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THEORY COMPONENT

MULTIPLE INTEGRALS

9 Hours

Double integration – Cartesian coordinates – Change of order of integration - Triple integration in Cartesian coordinates – Applications: Area as double integral and Volume as triple integral.

VECTOR CALCULUS

9 Hours

Gradient, divergence and curl – Directional derivative – Irrotational and Solenoidal vector fields - Green's theorem in a plane, Gauss divergence theorem and Stoke's theorem (excluding proofs) – Verification of theorem and simple applications.

ANALYTIC FUNCTIONS 9 Hours

Functions of a complex variable – Analytic functions – Necessary conditions, Cauchy- Riemann equations in Cartesian coordinates and sufficient conditions (excluding proofs)– Properties of analytic function – Construction of analytic function by Milne Thomson method – Conformal mapping : $w = z + c$, cz , $1/z$ – Bilinear Transformation

COMPLEX INTEGRATION

9 Hours

Cauchy's integral theorem – Cauchy's integral formula –Taylor's and Laurent's series – Singularities –Residues –Residue theorem –Application of residue theorem for evaluation of real integrals – Contour Integration (excluding poles on the real axis).

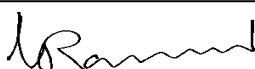
LAPLACE TRANSFORMS

9 Hours

Definition - Properties: Superposition, Shift in t or Time Delay, Shift in s, Time Derivatives, Time Integral-Initial Value Theorem - Final Value Theorem - Transform of periodic functions - Inverse transforms - Convolution theorem – Applications: Solution of linear ordinary differential equations of second order with constant coefficients.

REFERENCES

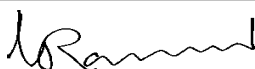
1. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 41st Edition, 2011.
2. RamanaB.V., "Higher Engineering Mathematics", Tata McGraw Hill Co. Ltd., New Delhi, 11th Reprint, 2010.
3. Veerarajan T., Engineering Mathematics (for First Year), Tata McGraw Hill Pub. Co. Ltd., New Delhi, Revised Edition, 2007.
4. Kandasamy P., Thilagavathy K., and Gunavathy K., "Engineering Mathematics", S. Chand & Co., New Delhi, (Reprint) 2008.
5. Kreyzig E., "Advanced Engineering Mathematics", Tenth Edition, John Wiley and sons, 2011.
6. VenkataramanM.K., "Engineering Mathematics", The National Pub. Co., Chennai, 2003.
7. Weir, MD, Hass J, Giordano FR: Thomas' Calculus Pearson education 12th ED, 2015.



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LAB COMPONENT**30 Hours****List of MATLAB Programmes:**

1. Evaluating double integral with constant and variable limits.
2. Area as double integral
3. Evaluating triple integral with constant and variable limits
4. Volume as triple integral
5. Evaluating gradient, divergence and curl
6. Evaluating line integrals and work done
7. Verifying Green's theorem in the plane
8. Evaluating Laplace transforms and inverse Laplace transforms of functions including impulse.
9. Heaviside functions and applying convolution.
10. Applying the technique of Laplace transform to solve differential equations.

Theory: 45**Tutorial: 0****Practical: 30****Project: 0****Total: 75 Hours**

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U18ENI2201 – FUNDAMENTALS OF COMMUNICATION - II
(Common to all branches of II Semester B.E/B/Tech Programmes)

Course Objectives:

1. To effectively use the basic language skills to imbibe technical language skills.
2. To hone written and spoken competencies leading to effective communication.
3. To comprehend, use and explain technical data and information.

L	T	P	J	C
2	0	2	0	3

Course Outcomes:

After the course the student will be able to:

CO1: Read, understand, and interpret material on technology.

CO2: Communicate knowledge and information through oral and written medium.

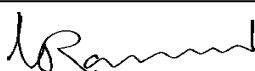
CO3: Compare, collate and present technical information according to the audience and purpose.

Assessment Methods

Direct
<ol style="list-style-type: none"> 1. Continuous Assessment of Skills 2. Assignment 3. Written Test 4. End Semester Examination
Indirect
<ol style="list-style-type: none"> 1. Course-end survey

CO/PO Mapping:

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO1		W		S					S	S		S		
CO2				S					S	S		W		
CO3				M					S	S		S		

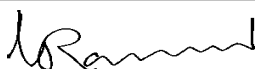


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No	TOPIC	
	MODULE I	12 Hrs
1.1	Introduction to Technical Writing Technical Definitions	2
1.2	Writing Instructions / Instruction Manual	2
1.3	Writing Recommendations	2
1.4	Speaking Activity I	6
	MODULE II	12 Hrs
2.1	Process Writing	2
2.2	Review Writing I - Product	2
2.3	Review Writing II – Article	2
2.4	Speaking Activity II	6
	MODULE III	12 Hrs
3.1	Interpreting and Transcoding Graphics	2
3.2	Types of Report / Writing a Report	2
3.3	Reading & Responding to texts	2
3.4	Speaking Activity III	6
	MODULE IV	12 Hrs
4.1	Drafting a project proposal	2
4.2	Listening to technical talks	2
4.3	Preparing a survey Questionnaire	2
4.4	Speaking Activity IV	6
	MODULE V	12 Hrs
5.1	Writing Memos, Circulars, Notices	2
5.2	Writing Agenda and Minutes	2
5.3	Inferential Reading	2
5.4	Speaking Activity V	6
	Total	60

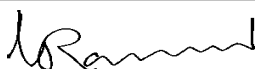
Reference Books:

1. Technical English Workbook, VRB Publishers Pvt. Ltd (Prof. JewelcyJawahar, Dr.P.Ratna)
2. Effective Technical Communication, Tata McGraw Hills Publications (Ashraf Rizvi)
3. Technical Communication – English Skills for Engineers, Oxford Higher Education (Meenakshi Raman, Sangeeta Sharma)



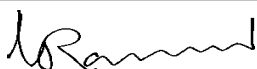
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U18CHI2201	ENGINEERING CHEMISTRY (Common to All Branches)					L	T	P	J	C		
						3	0	2	0	4		
Course Outcomes												
After successful completion of this course, the students should be able to												
CO1: Apply the basic principles of chemistry at the atomic and molecular level.												
CO2: Analyze the impact of engineering solutions from the point of view of chemical principles												
CO3: Apply the chemical properties to categorize the engineering materials and their uses												
CO4: Integrate the chemical principles in the projects undertaken in field of engineering and technology												
CO5: Develop analytical proficiency through lab skill sets to demonstrate in professional practice.												
Pre-requisites :												
Nil												
CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M											
CO2	S		M		M							
CO3	S	M										
CO4	S			M					S		W	
CO5	S					M			S	W		
Course Assessment methods												
Direct												
1. Continuous Assessment Test I, II 2. Open book test; Cooperative learning report, Assignment; Journal paper review, Group 3. Presentation, Project report, Poster preparation, Prototype or Product Demonstration etc (as applicable) 4. End Semester Examination												
Indirect												



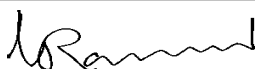
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1. Course-end survey	
<u>Theory Component</u>	
CHEMICAL BONDING	7 Hours
<p>Bonding: Introduction – Ionic bonding - Van der Waal's forces (dipole - dipole, dipole - induced dipole, induced dipole - induced dipole interactions) - hydrophobic interaction.</p> <p>Bonding in organic molecules: covalent and co-ordinate bonds (overview only) - hybridization (sp, sp², sp³) - hydrogen bonding and its consequences.</p>	
THERMODYNAMICS	7 Hours
<p>Introduction - Thermodynamic process – Internal energy – Enthalpy – limitations of First law of thermodynamics – Second law of thermodynamics - Entropy - Third law of thermodynamics – Free Energy and Work Function – Clausius-Clapeyron equation – Maxwell's relations – Kirchhoff's equation.</p>	
ELECTROCHEMISTRY AND CORROSION	7 Hours
<p>Electrodes - Electrode Potential – Nernst equation and problems - Galvanic cell - Electrochemical Series.</p> <p>Corrosion: Classification and mechanism of chemical and electrochemical corrosion - Factors influencing corrosion</p> <p>Corrosion control: Inhibitors – Cathodic protection (Sacrificial anodic protection, Impressed current cathodic protection) – Protective coating: Electroplating (Au) and Electroless plating (Ni).</p>	
WATER TECHNOLOGY	6 Hours
<p>Introduction - soft/hard water - Disadvantages of hard water in industries– scale, sludge, priming and foaming, caustic embrittlement.</p> <p>Treatment of hard water: External treatment (Ion exchange method) - Internal treatment (colloidal, carbonate, phosphate and calgon conditioning) - Desalination (Reverse osmosis, Electrodialysis)</p>	



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ENGINEERING MATERIALS	9 Hours
<p>Polymer: Introduction – Preparation, Properties and Applications of PMMA, PET, PVC.</p> <p>Composites: Constituents of Composites – Polymer Composites - Metal Matrix Composites - Ceramic Matrix Composites – Applications</p> <p>Lubricants: Classification - Functions - Properties (viscosity index, flash and fire point, oiliness, carbon residue, aniline point, cloud point and pour point) - Semi solid lubricant (greases with calcium based, sodium based, lithium based) - Solid lubricants (graphite, molybdenum disulphide)</p>	
SURFACE CHEMISTRY AND CATALYSIS	9 Hours
<p>Adsorption: Types of adsorption – Adsorption isotherms: Freundlich’s adsorption isotherm – Langmuir’s adsorption isotherm – Applications of adsorption on pollution abatement.</p> <p>Catalysis: Catalyst – catalytic poisoning and catalytic promoters - autocatalysis – acid base catalysis – enzyme catalysis – Michaelis-Menten equation – applications.</p> <p>Chemical kinetics: Introduction – first order, pseudo first order, second order, zero order equations – parallel reactions – opposing reactions.</p>	
<p>Theory: 45 Tutorial: 0 Practical: 0 Project: 0 Total: 45 Hours</p>	
<p>REFERENCES</p> <ol style="list-style-type: none"> 1. Jain P.C. and Jain. M., Engineering Chemistry, 16th Edition, DhanpatRai Publishing Company, New Delhi, Reprint 2017. 2. PuriB.R., SharmaL.R., Pathania, M.S. Principles of physical chemistry, Vishal Publishing Co., 2017 3. Atkins, P. and de Paula, J., Atkin’s Physical Chemistry, 9th ed., Oxford Univ. Press, 2009. 4. Glasstone S., An introduction to Electrochemistry, 10th Edition, Affiliated to East West Press Private Limited, 2007. 5. Samir Sarkar., Fuels and Combustion, 3rd Edition, Orient Longman, India, 2009. 6. Dara S.S. and Umare S.S., A text book of Engineering Chemistry, S.Chand and Company Limited, New Delhi, 2014. 7. Engineering Chemistry, Wiley India Editorial Team, Wiley, 2018. 	



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LABORATORY COMPONENT

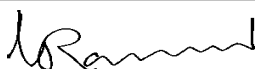
LIST OF EXPERIMENTS

1. Preparation of Standard solutions
2. Conductometric estimation of mixture of acids vs strong base
3. Estimation of extent of corrosion of Iron pieces by Potentiometry
4. Estimation of the extent of dissolution of Copper / Ferrous ions by spectrophotometry.
5. Estimation of acids by pH metry.
6. Determination of total, temporary and permanent hardness by EDTA method.
7. Estimation of DO by Winkler's method
8. Estimation of Alkalinity by Indicator method.
9. Estimation of Chloride by Argentometric method
10. Estimation of Sodium and Potassium in water by Flame photometry.
11. Determination of Flash and Fire point of lubricating oil
12. Determination of Cloud and Pour point of lubricating oil
13. Determination of relative and kinematic viscosities of lubricating oil at different temperatures
14. Determination of corrosion rate on mild steel by Weight loss method
15. Morphological studies of corrosion on mild steel by microscopic techniques

Theory: 0 Tutorial: 0 Practical: 30 Project: 0 Total: 30 Hours

REFERENCES

1. Jeffery G.H., Bassett J., Mendham J. and Denny R.C., Vogel's Text Book of Quantitative Chemical Analysis, Oxford, ELBS, London,2012.
2. Shoemaker D.P. and C.W. Garland., Experiments in Physical Chemistry, Tata McGraw-Hill Pub. Co., Ltd., London,2003.



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U18CSI2201 PYTHON PROGRAMMING

(Common to All Branches)

COURSE OUTCOMES

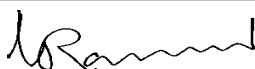
L	T	P	J	C
2	0	2	0	3

AFTER SUCCESSFUL COMPLETION OF THIS COURSE, THE STUDENTS SHOULD BE ABLE TO:

CO1:	Classify and make use of python programming elements to solve and debug simple logical problems.(K4,S3)
CO2:	Experiment with the various control statements in Python.(K3,S2)
CO3:	Develop Python programs using functions and strings.(K3,S2)
CO4:	Analyze a problem and use appropriate data structures to solve it.(K4,S3)
CO5:	Develop python programs to implement various file operations and exception handling.(K3,S2)

Pre-requisites :Nil

CO/PO MAPPING															
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak															
Cos	PROGRAMME OUTCOMES (POs)												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		S			M					M		M			
CO2			M							M		M			
CO3			M							M		M		M	
CO4	S	S	M		M					M		M	M	M	
CO5			M							M		M			



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COURSE ASSESSMENT METHODS

DIRECT
<ol style="list-style-type: none"> 1. Continuous Assessment Test I, II (Theory component) 2. Open Book Test, Assignment 3. Viva, Experimental Report for each Experiment (lab Component) 4. Model Examination (lab component) 5. End Semester Examination (Theory and lab components)
INDIRECT
<ol style="list-style-type: none"> 1. Course-end survey

THEORY COMPONENT CONTENTS

BASICS OF PYTHON PROGRAMMING

6 Hours

Introduction-Python Interpreter-Interactive and script mode-Values and types, operators, expressions, statements, precedence of operators, Multiple assignments, comments.

CONTROL STATEMENTS AND FUNCTIONS IN PYTHON

6 Hours

Conditional (if), alternative (if-else), chained conditional (if-elif-else)-Iteration-while, for, break, continue, pass – Functions-Introduction, inbuilt functions, user defined functions, passing parameters, return values, recursion, Lambda functions.

DATA STRUCTURES: STRINGS, LISTS and SETS

7 Hours

Strings-String slices, immutability, string methods and operations -Lists-creating lists, list operations, list methods, mutability, aliasing, cloning lists, list and strings, list and functions-list processing-list comprehension, searching and sorting, Sets-creating sets, set operations.

DATA STRUCTURES: TUPLES, DICTIONARIES 5 Hours

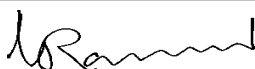
Tuples-Tuple assignment, Operations on Tuples, lists and tuples, Tuple as return value- Dictionaries-operations and methods, Nested Dictionaries.

FILES, MODULES, PACKAGES

6 Hours

Files and Exception-Text files, reading and writing files, format Operator-Modules-Python Modules-Creating own Python Modules-packages, Introduction to exception handling.

Theory: 30	Tutorial: 0	Practical: 0	Project: 0	Total: 30 Hours
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REFERENCES

1. Ashok NamdevKamthane,Amit Ashok Kamthane, “Programming and Problem Solving with Python” , Mc-Graw Hill Education,2018.
2. Allen B. Downey, “Think Python: How to Think Like a Computer Scientist”, Second edition, Updated for Python 3, Shroff / O’Reilly Publishers, 2016.
3. Robert Sedgewick, Kevin Wayne, Robert Dondero, “Introduction to Programming in Python: An Inter-disciplinary Approach”, Pearson India Education Services Pvt. Ltd., 2016.
4. Timothy A. Budd,” Exploring Python”, Mc-Graw Hill Education (India) Private Ltd., 2015.
5. Kenneth A. Lambert, “Fundamentals of Python: First Programs”, CENGAGE Learning, 2012.
6. Charles Dierbach, “Introduction to Computer Science using Python: A Computational Problem Solving Focus”, Wiley India Edition, 2013.

E BOOKS AND ONLINE LEARNING MATERIALS11

1. www.mhhe.com/kamthane/python
2. Allen B. Downey, Think Python: How to Think Like a Computer Scientist, Second edition, Updated for Python 3, Shroff / O’Reilly Publishers, 2016
(<http://greenteapress.com/wp/think-python/>)

LAB COMPONENT CONTENTS

30 Hours

LIST OF EXPERIMENTS

1. Implement simple python programs using interactive and script mode.
2. Develop python programs using id() and type() functions
3. Implementrange() function in python
4. Implement various control statements in python.
5. Develop python programs to perform various string operations like concatenation,slicing, Indexing.
6. Demonstrate string functions using python.
7. Implementuser defined functions using python.
8. Develop python programs to perform operations on list
9. Implement dictionary and set in python
10. Develop programs to work with Tuples.
11. Create programs to solve problems using various data structures in python.
12. Implement python program to perform file operations.
13. Implement python programs using modules and packages.

Theory: 0	Tutorial: 0	Practical: 30	Project: 0	Total: 30 Hours
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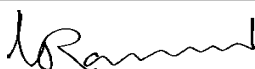
ONLINE COURSES AND VIDEO LECTURES:

<http://nptel.ac.in>

<https://www.edx.org/course/introduction-to-python-fundamentals-1>

<https://www.edx.org/course/computing-in-python-ii-control-structures-0>

https://www.edx.org/course?search_query=Computing+in+Python+III%3A+Data+Structures



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U18MEI1201 ENGINEERING GRAPHICS

L	T	P	J	C
2	0	2	0	3

Course outcome

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

CO1: Construct various plane curves.

CO2: Construct projection of points and projection of lines.

CO3: Develop projection of surfaces and solids.

CO4: Solve problems in sections of solids and development of surfaces.

CO5: Apply free hand sketching and concepts of isometric in engineering practice.

CO6: Draw engineering drawing in AutoCAD with dimensions.

Pre-requisites: Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	M										S		
CO2	S	S									W	S		
CO3	S	S									M	S		
CO4	S	S										S		M
CO5	S	S										S		M
CO6	S											S		M

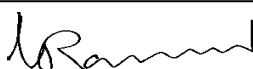
Direct
1. Continuous Assessment Test
2. Assignment
3. End Semester Examination

PLANE CURVES, PROJECTION OF POINTS, LINES AND PLANES**10 Hours**

Importance of graphics in design process, visualization, communication, documentation and drafting tools, Construction of curves - ellipse, parabola, and hyperbola by eccentricity method only. Orthographic projection of points.

Projections of straight lines located in first quadrant - determination of true length and true inclinations.

Projections of plane surfaces - polygonal lamina and circular lamina, located in first quadrant and inclined to one reference plane.

PROJECTION**AND****SECTION OF SOLIDS**


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10 Hours

Projection of simple solids - prism, pyramid, cylinder and cone. Drawing views when the axis of the solid is inclined to one reference plane.

Sectioning of simple solids - prisms, pyramids, cylinder and cone. Obtaining sectional views and true shape when the axis of the solid is vertical and cutting plane inclined to one reference plane.

**DEVELOPMENT OF SURFACES, ISOMETRIC PROJECTIONS
AND FREE-HAND SKETCHING**

10 Hours

Development of lateral surfaces of truncated prisms, pyramids, cylinders and cones.

Isometric projection, Isometric scale, Isometric views of simple solids, truncated prisms, pyramids, cylinders and cones.

Free hand sketching techniques, sketching of orthographic views from given pictorial views of objects, including free-hand dimensioning.

INTRODUCTION TO AUTOCAD**15 Hours**

Introduction to Drafting Software (AutoCAD) & its Basic Commands. Introduction to coordinate systems, object selection methods, selection of units and precession. sketching – line, circle, arc, polygon, rectangle and ellipse. Working with object snaps, layers and object properties. Editing the objects – copy, move, trim, extend, working with arrays, mirror, scale, hatch, fillet and chamfer.

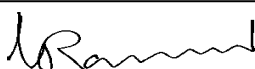
ISOMETRIC VIEWS WITH AUTOCAD**15 Hours**

Building drawings – Single and double bed room house (sectional Top view only). Introduction to Motion path animation. Isometric views of simple solid blocks.

Theory: 30	Tutorial: 0	Practical:30	Project: 0	Total : 60 Hours
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REFERENCES

1. Basant Agrawal and CM Agrawal, Engineering Drawing, McGraw-Hill, New Delhi, First Edition, 2008.
2. Venugopal K. and Prabhu Raja V., Engineering Graphics, New Age International (P) Limited, New Delhi, 2008.
3. NatarajanK.V., Engineering Drawing and Graphics, Dhanalakshmi Publisher, Chennai, 2005.
4. Warren J. Luzadder and Jon. M. Duff, Fundamentals of Engineering Drawing, Prentice Hall of India Pvt. Ltd., New Delhi, Eleventh Edition, 2005.
5. GopalakrishnaK.R., Engineering Drawing (Vol. I & II), Subhas Publications, 2001.
6. James Leach, AutoCAD 2017 Instructor, SDC Publications, 2016.



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U18MEP1501 ENGINEERING PRACTICES LABORATORY

L	T	P	J	C
0	0	2	0	1

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Select the various tools and equipment's used in the fabrication workshop.

CO2: Develop various models in carpentry and fitting

CO3: Make components using sheet metal work.

CO4: Select the various tools and joints for different applications in plumbing.

CO5: Demonstrate and evaluate the parameters of basic electronic components (wires, resistors, capacitors, diodes etc.) and test the components.

CO6: Estimate DC and AC Voltage and currents using appropriate measuring instruments.

Pre-requisites :

Nil

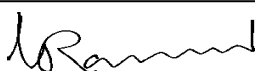
COs	CO-PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak											
	Programme Outcomes(POS)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2					M							
CO3			M									
CO4						W						
CO5	M											
CO6	M											

Course Assessment methods

Direct
1. Pre-or Post-experiment Test/Viva; Experimental Report for each experiment; Comprehensive report / Model Examination
2. End Semester Examination
Indirect
1. Course-end survey

List of Experiments

30 Hours



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GROUP – I**A. CIVIL ENGINEERING**

1. Carpentry

- Study of carpentry tools
- Preparation of T joint
- Preparation of dovetail joint

2. Plumbing

- Study of pipeline joints

B. MECHANICAL ENGINEERING

1. Fitting

- Study of fitting tools
- Preparation of L joint

2. Sheet Metal Working

- Study of sheet metal working tools
- Preparation of cone
- Preparation of tray

GROUP - II (ELECTRICAL & ELECTRONICS ENGINEERING)**C. ELECTRICAL ENGINEERING PRACTICE**

1. Assembling simple electronic component on a small PCB and Testing.

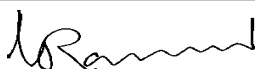
2. Soldering simple electronic circuits and checking continuity.

3. Measurements using digital multimeter.

- DC and AC voltage measurement
- DC and AC current measurements.
- Resistance Measurement.
- Continuity measurement.

1. Testing of Electronic components

- Resistors
 - Inductors and capacitors
 - Diodes (resistance in forward bias and reverse bias)
 - Transistors
3. Study of CRO and Function generator
- Study of Panel Controls
 - Measurement of Amplitude, Frequency, phase difference



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U18INI2600**ENGINEERING
CLINIC – II**

L	T	P	J	C
0	0	4	2	3

Course objectives

- To help the students look into the functioning of simple to complex devices and systems
- To enable the students to design and build simple systems on their own
- To help experiment with innovative ideas in design and team work
- To create an engaging and challenging environment in the engineering lab

Course Outcomes

After successful completion of this course, the students should be able to:

CO1: Identify a practical problems and find a solution

CO2: Understand the project management techniques

CO3: Demonstrate their technical report writing and presentation skills

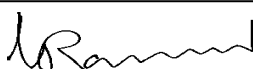
Pre-requisite:

1. U18INI1600 Engineering Clinic- I

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	S	S	S	S	M	W		S			S		
CO2											S			
CO3										S				

Course Assessment methods:

Direct	Indirect
1. Project reviews 50%	1. Course Exit Survey
2. Workbook report 10%	
3. Demonstration& Viva-voce 40%	



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Content:

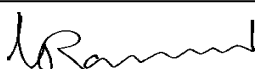
The course will offer the students with an opportunity to gain a basic understanding of computer controlled electronic devices and apply the concepts to design and build simple to complex devices. As a practical project based embedded course, the students will be taught the concepts using a variety of reference material available in the public domain. While the course will start with formal instruction on hardware, programming and applications, the major portion of the course will provide the students with ample opportunity to be innovative in designing and building a range of products from toys to robots and flying machines.

In the II semester, students will focus primarily on Raspberry pi based controllers with Python programming.

GUIDELINES:

1. Practical based learning carrying credits.
2. Multi-disciplinary/ Multi-focus group of 5-6 students.
3. Groups can select to work on a specific tasks, or projects related to real world problems.
4. Each group has a faculty coordinator/Instructor who will guide/evaluate the overall group as well as individual students.
5. The students have to display their model in the 'Engineering Clinics Expo' at the end of semester.
6. The progress of the course is evaluated based on reviews and final demonstration of prototype.

Total Hours: 90



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U18VEP2502**INTERPERSONAL VALUES**

(Mandatory)

L	T	P	J	C
0	0	2	0	0

Course Outcomes

After successful completion of this course, the students should be able to

CO 1: Develop a healthy relationship & harmony with others

CO 2: Practice respecting every human being

CO 3: Practice to eradicate negative temperaments

CO 4: Acquire Respect, Honesty, Empathy, Forgiveness and Equality

CO 5: Practice Exercises and Meditation to lead a healthy life

CO 6: Manage the cognitive abilities of an Individual

Pre-requisites :

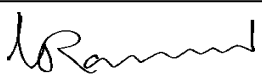
1. U18VEP1501 / PERSONAL VALUES

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1										S		
CO2									S			
CO3											M	S
CO4						M						
CO5												M
CO6											M	

Course Assessment methods

Direct
1.Group Activity / Individual performance and assignment 2.Assessment on Value work sheet / Test
Indirect
1. Mini project on values / Goodwill Recognition

Values through Practical activities:


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1. Introduction: Introduction to interpersonal values – Developing harmony with others – Healthy relationship – Need & importance of interpersonal values for dealing with others and team - Effective communication with others.

2. Maneuvering the temperaments: From Greed To Contentment - Anger To Tolerance - Miserliness To Charity – Ego To Equality - Vengeance To Forgiveness.

3. Core value : Truthfulness -Honesty –Helping–Friendship – Brotherhood – Tolerance – Caring & Sharing – Forgiveness – Charity –Sympathy — Generosity – Brotherhood - Adaptability.

4.Pathway to Blissful life :

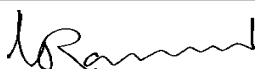
Signs of anger – Root cause – Chain reaction – Evil effects on Body and Mind – Analyzing roots of worries – Techniques to eradicate worries.

5.Therapeutic measures:Spine strengthening exercises - Nero muscular breathing exercises - Laughing therapy - Mindfulness meditation.

Workshop mode

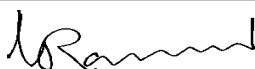
REFERENCES

1. INTERPERSONAL SKILLS Tutorial (PDF Version) - TutorialsPoint
www.tutorialspoint.com/interpersonal_skills/interpersonal_skills_tutorial.pdf
2. INTERPERSONAL RELATIONSHIPS AT WORK - KI Open Archive - Karolinska
[www. publications.ki.se/xmlui/bitstream/handle/10616/39545/thesis.pdf?sequence=1](http://www.publications.ki.se/xmlui/bitstream/handle/10616/39545/thesis.pdf?sequence=1)
3. VALUES EDUCATION FOR PEACE, HUMAN RIGHTS, DEMOCRACY – UNESCO www.unesdoc.unesco.org/images/0011/001143/114357eo.pdf
4. MANEUVERING OF SIX TEMPERAMENTS - Vethathiri Maharishi
[www.ijhssi.org/papers/v5\(5\)/F0505034036.pdf](http://www.ijhssi.org/papers/v5(5)/F0505034036.pdf)
5. THE BLISS OF INNER FIRE: HEART PRACTICE OF THE SIX ... - Wisdom Publications
www.wisdompubs.org/sites/.../Bliss%20of%20Inner%20Fire%20Book%20Preview.pdf..



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SEMESTER III



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**U18EEI3206BASIC ELECTRICAL AND ELECTRONICS
ENGINEERING** (Common to Auto, Aero, Bio, FT, CSE,IT)

L	T	P	J	C
3	0	2	0	4

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1	Acquire basic knowledge on DC and AC circuits.	K₂
CO2	Understand the construction, working principle and applications of DC machines	K₂
CO3	Understand the construction, working principle and applications of AC machines and transformers.	K₂
CO4	Acquire basic knowledge on logic gates, semiconductor devices and their applications.	K₂
CO5	Identify electronic components and use them to design simple circuits.	K₂

Pre-requisite courses: NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	M	M										W		
CO2	M	M										W		
CO3	M	M										W		
CO4	M	M										W		
CO5	M	M										W	W	

DC CIRCUITS:

9hours

Basic circuit elements and sources, Ohms law, Kirchhoff's laws, series and parallel connection of circuit elements, Node voltage analysis, Mesh current analysis.

AC CIRCUITS:

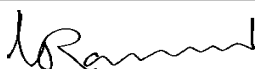
9hours

Alternating voltages and currents –SinglePhase Series RL, RC, RLC Circuits, Power in AC circuits –PowerFactor.

ELECTRICAL MACHINES:

9hours

Construction, Working Principle and applications of DC generators, DC Motors, single phase Transformers, three phase and single phase induction motors.



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SEMICONDUCTOR DEVICES AND CIRCUITS:**9hours**

PN junction diode – Zener Diode – Half wave and Full wave rectifier-voltage regulators – Bipolar Junction transistors, JFET, MOSFET – characteristics

DIGITAL SYSTEMS:**9hours**

Binary Number System – Logic Gates – Boolean algebra – Half and Full Adders -subtractor– Multiplexer – Demultiplexer-decoder-flip flops.

Theory: 45 Tutorial: 0 Practical: 0 Project: 0

Total: 45 hours

Laboratory Experiments

1. Measurement of electrical quantities – voltage, current, power & power factor in RL, RC and RLC circuits.
2. Verification of Kirchhoff's Voltage and Current Laws.
3. Verification of Mesh and Nodal analysis.
4. Load test on DC shunt motor.
5. Load test on single phase transformer.
6. Load test on single phase induction motor.
7. Verification of truth tables of OR, AND, NOT, NAND, NOR, EX-OR, EXNOR gates.
8. Full wave rectifier with and without filter.
9. Input and output Characteristics of BJT – CE configuration.
10. Characteristics of PN junction diode and Zener diode.

Theory: 0

Tutorial: 0

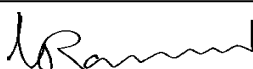
Practical: 30

Project: 0

Total: 30 Hours

REFERENCES

1. Muthusubramanian R, Salivahanan S and Muraleedharan K A, "Basic Electrical, Electronics and Computer Engineering", Tata McGraw Hill, Second Edition, 2017.
 2. Nagsarkar T K and Sukhija M S, "Basics of Electrical Engineering", Oxford press 2005.
 3. Mehta V K, "Principles of Electronics", Third Edition, S. Chand & Company Ltd, 1994.
 4. Mahmood Nahvi and Joseph A. Edminister, "Electric Circuits", Schaum's Outline Series, McGraw Hill, 2002.
 5. Premkumar N, "Basic Electrical Engineering", Anuradha Publishers, 2003.
- ”, Oxford press, 2005.



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U18FTT3001 YARN TECHNOLOGY

L	T	P	J	C
3	0	0	0	3

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1	Outline sequentially the processes involved in short staple spinning	K2
CO2	Outline sequentially the processes involved in long staple spinning	K2
CO3	Acquire knowledge on basic principles of advanced spinning systems	K2
CO4	Acquire knowledge on post spinning operations and yarn, package faults	K3
CO5	Outline sequentially the processes involved in the production of sewing threads	K3
CO6	Acquire knowledge on speciality yarns and their production	K2

Pre-requisite courses: U18FTT1001 Fibre science

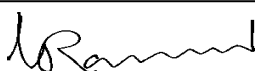
CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PO1 2	PSO 1	PSO 2
CO1	M													M
CO2	M													M
CO3	M												M	
CO4	M												S	
CO5	M												M	
CO6	M												S	

Course Assessment methods:

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course End Survey

Course Content**SHORT STAPLE SPINNING SYSTEM (COTTON):****12Hours**

Ginning-objectives, types, suitability and principle of working. Sequence of process in cotton spinning, Objectives and principles of working of Blow. room Carding, Drawing, Combing, Simplex and Ring spinning. Corespun yarn production in



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ringframe.

LONG STAPLE SPINNING SYSTEM (WORSTED):

7 Hours

Sequence of process; objectives and principles of working of Scouring, Drying, Oiling, Dyeing, Blending, Carding, Gilling and Combing, Drawing, Roving and Spinning.

ADVANCED SPINNING SYSTEMS

10 Hours

Basic Principles of Rotor spinning, Air jet spinning and DREF spinning systems. Solo and Compact spinning systems - objectives and principles of working. Comparison of characteristics of yarns from different spinning systems.

POST SPINNING AND YARN QUALITY

7 Hours

Objectives and principles of working of Ring doubler and Two for one twister (TFO)-Single yarn and ply yarn characteristics and their applications.

Yarn quality and characteristics - Yarn faults, imperfections and their identification. Package faults (Cones, cheese and Hanks) and identification.

SEWING THREAD AND SPECIALITY YARNS:

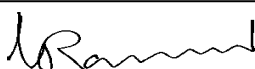
9 Hours

Sewing Thread Manufacture: Fibres used and their characteristics. Essential quality requirements of sewing threads, Sequence of manufacturing process for sewing threads for cotton, polyester and polyester/cotton blends. Speciality Yarns: Fancy yarns, textured yarns and Melange yarns-Types and classifications.

TOTAL: 45 HOURS

REFERENCES

1. Klien, W.G, "The Technology of Short Staple Spinning" The Textile Institute, Manchester, 1988 (five volumes)
2. Mahendra Gowda, R. V, "New Spinning Systems", NCUTE Publication, Second Edition, 2006
3. Joseph, M.L, "Essentials of Textiles", Hold Rienhart Winston Pub. Co., New York, 1990
4. Oxtoby E, "Spun Yarn Technology", Butterworth and Co., London, 1991.
5. Corbmann, B.P, "Textiles: Fibre to Fabric", McGraw Hill Inc., USA, 1996.
6. Chellamani, K.P, Chattopadhyay, D, "Yarns and Technical Textiles" SITRA publication, First Edition, 1999



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U18FTI3202CONCEPTS OF FASHION AND DESIGN

L	T	P	J	C
3	0	2	0	4

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Adapt elements & principles of design in context to Textiles and Apparels.	K6
CO2	Choose suitable color dimensions and categories for textiles and apparels.	K3
CO3	Summarize the dynamics of fashion and the role of fashion designers and fashion forecasting process.	K2
CO4	Explain the significance of a fashion portfolio and Identify the traditional world costumes and textiles of India.	K3
CO5	Design patterns and garments using various drawing techniques and drawing media. Illustrate various garment components, accessories & human anatomy.	K3
CO6	Develop theme boards based on a theme. Create patterns and garment designs deriving inspirations from a theme.	K3

Pre Requisite: Nil

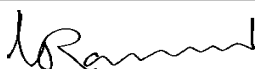
CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO1		S	S										S	S
CO2		S	S	M									S	S
CO3		S						M				M	M	
CO4		S	S	M									M	
CO5			M							M				
CO6		S												

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1.Course Exit Survey

Course Content**DESIGN CONCEPTS****7 Hours**

Design – definition, Design types- natural, stylized, geometric, historic and abstract, garment design- structural, decorative and functional. Elements of Design –line, shape, form, size, colour, texture and pattern. Principles of Design – Harmony, Balance, Rhythm, Emphasis and Proportion. Introducing elements and principles of design in apparels.



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COLOUR CONCEPTS**7 Hours**

Color – Definition, Dimensions of colour-Hue, Value and Intensity, Colour categories and psychology - Warm and Cool Colours, Advancing and Receding colours, Colour theories – Prang colour system and Munsell colour system - colour harmonies.

FASHION FUNDAMENTALS**11 Hours**

Fashion -Definition, Classification of fashion, tangibles and intangibles of fashion, Principles of fashion, Fashion life cycle, Fashion adoption theories. Fashion terminology -Street fashion, Recurring fashion, Mass fashion, Fashion trend, Fashion shows, Style, Chic, Boutique, Haute Couture, Fashion designers – definition, role and study of leading fashion designers - French, Italian, American, Indian and British.

FASHION DESIGNING PROCESS**9 Hours**

Fashion Forecasting – role of forecasting agencies, techniques and presentation of forecast. Design process – Innovation of practice, analyzing the brief, Research inspiration – Research direction, prototyping, planning a collection, designer boards and portfolio presentation

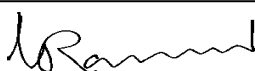
HISTORIC COSTUMES AND TEXTILES**11 Hours**

Origin and importance of clothing, Factors influencing costume changes. Costumes of ancient civilization – Egypt, Greece, Rome, French empires during Renaissance period 1500 - 1600 AD, Traditional costumes of India, China and Japan. Traditional Textiles of India – Dacca Muslin, Jamdhani, Himrus and Amrus, Kashmir shawls, Kancheepuram and Baluchari saris, Paithani saris, Chanderi saris, Benaras Brocades, Bandhani, Patola, Ikkat, Block printed and Kalamkari.

Theory: 45	Tutorial: 0	Practical: 0	Project: 0	Total: 45 Hours
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REFERENCES

1. Kathryn McKelvey and Janine Munslow, “Fashion Design: Process, Innovation and Practice”, Blackwell Publishing, USA, 2005.
2. Diane.T and Cassidy. T, “Colour forecasting” Blackwell Publishing, 2005
3. Dar, S.N., “Costumes of India and Pakistan”, D.BTataporevala Sons and Co. Ltd., 1982.
4. ChuryeG.S, “Indian Costume”, Popular PrakashanPvt. Ltd., Bombay, 1995.
5. HatanakaKokyo Collection –“Textile arts of India”, Chronide Books, 1996
6. Elaine Stone, Jean A. Samples, “Fashion Merchandising” McGraw-Hill Book Company 1985.
7. RusselGillow and Nicholas Barnard, “Traditional Indian Textiles”, Thames and Hudson Ltd.,London, 1991.
8. Douglas.A. Russel, “Costume History and Style”, Prentice Hall Inc., 1983
9. Elizabeth Rouse, “Understanding Fashion”, Blackwell Scientific Publication, Oxford, 1989.
10. Katherine Morris Lustre, “Historic Costume”, Chas A. Bennett Co., Publishers, Peoria, Illinois, 1956.



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LAB COMPONENT CONTENTS

LIST OF EXPERIMENTS

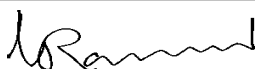
1. Motif Development – Design Repeat and positioning.
2. Object Drawing and Shading concepts. Drape of fabrics and shading with different mediums
3. Preparing swatches for dimensions of colour, different colour theories and harmonies
4. Rendering prints and textures with various fabric constructions (wovens, non-wovens and knit)
5. Drawing different Silhouettes and garment components - sleeves, collars, necklines, cuffs, skirts, pants
6. Human Anatomy- Figure basics, Constant proportions, Shapes and parts of human body. Study of different postures- Head- Face, Eyes, Lips, Nose, Hand - Fingers, Leg - Feet and Toes, Hand and Arms.
7. Normal Drawing - Eight head theory. Fashion Figure Drawing - Drawing croqui figures- stick, geometric, flesh - 8 ½ and 10 head figures.
8. Different postures of male and female figure - ¾ view, back view, side view. Different poses like – S-Pose, X-Pose, and T-pose.
9. Drawing croqui figures using template, model, imagination and photograph.
10. Create a mood board based on a selected theme, Develop garments on croqui figures (Male and female) deriving inspirations from the developed mood board.

Theory: 0 Tutorial: 0

Practical: 30

Project: 0

Total: 30 Hours



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U18FTT3003 PATTERN MAKING AND ADAPTATION

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Define and classify the patterns and memorize the steps involved in taking body measurement	K2
CO2	Prepare the basic block patterns for men, women and kids wear based on the principles and methodologies of drafting	K3
CO3	Prepare patterns for basic blocks using draping techniques	K3
CO4	Apply dart manipulation techniques to design, variation in garment components	K6
CO5	Evaluate the techniques involved in pattern alteration for various body measurements and fitting problems	K5
CO6	Develop knowledge on the techniques involved in grading for various sizes of body measurements	K3

Pre Requisite : Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2
CO 1		S											M	
CO 2	S	S	M							M			S	M
CO 3	S	S	M							M			S	M
CO 4		S	S										S	
CO 5	S	S	M	M								M	M	
CO 6	S	S	M										M	

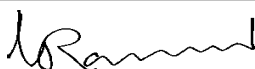
Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

Course Content

BASICPATTERNMAKING

9 Hours



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Patterns – definition and types- individual and commercial patterns. Pattern making – definition and types of pattern making- drafting, draping, flat pattern techniques, their advantages and disadvantages. Tools for pattern making. Body measurements – importance, principles, precautions. Definition and standardization of size chart (ASTM Standards)

DRAFTING

9 Hours

Basic principles and methodologies used to draft standard basic block patterns for men, women and kids wear- top, skirt and bifurcated garment (pyjama) . Importance of pattern details – pattern name, cut number, on fold details, drill hole marks, darts, Seam allowances, notches, Balances marks and grain lines.

DRAPING

9 Hours

Draping - Tools for Draping. Draping skills – preparation of basic blocks- bodice, skirt, sleeve and trouser.

FLATPATTERNTECHNIQUES

9 Hours

Dart Manipulation – basic techniques – pivot method, slash and spread, measurement method. Applications of dart manipulation on bodice with darts on shoulder, armhole, side seam and waistline – transferring darts, combining, dividing, converting into seams and fullness – drafting princess line cut.

PATTERNALTERATION

5 Hours

Pattern alteration - definition, principles, techniques – Lengthening, shortening, widening, narrowing patterns according to required body measurements by slash and spread or slash and overlap methods.

GRADING

4 Hours

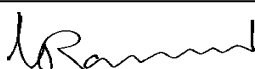
Grading – Definition, Principles and types –manual grading and computerized grading for bodice block, sleeve and skirt.

Theory: 45 Hours

Total: 45 Hours

REFERENCES

1. Helen Joseph Armstrong, “Pattern Making for Fashion Design” Pearson Education (Singapore) Pvt. Ltd., 2005
2. Winifred Aldrich, “Metric Pattern Cutting” Blackwell Science Ltd., 1994
3. Amaden-Crawford Connie, “The Art of Fashion Draping (3rd edition)” Om Books International Publications, 2005
4. Hollen Norma R; KundelCarlyn, “Pattern making by the flat pattern method”, 1998
5. Gillian Holman, “PatternCuttingMadeEasy”, Blackwell Scientific Publications, 1997.
6. Natalie Bray “More Dress Pattern Designing” Blackwell Scientific Publications, 1986.
7. Gerry Cooklin, “Master Patterns and Grading for Women’s Outsizes”, Blackwell Scientific Publications, 1995.
8. Gerry Cooklin, “Master Patterns and Grading for Men’s Outsize”, Blackwell Scientific Publications, 1992.
9. Jeenne Price and Bernard Zamkoff, “Grading Techniques for Modern Design” Fairchild Publications, 1990.



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U18FTI3204GARMENT COMPONENTS FABRICATION

L	T	P	J	C
3	0	2	0	4

COURSE OUTCOMES

After successful completion of this course, the students should be able to

CO1	Define and Classify the types of stitches, seams, seam finishes, stitch and seam defects.	K2
CO2	Discuss the various methods for creating fullness in garments	K6
CO3	Develop simple patterns for different garment components	K3
CO4	Construct different types of garment components suiting requirements of the wearer	K3
CO5	Construct the different types of garment fasteners suiting requirements of the wearer	K3
CO6	Select and analyze garment components, seam /stitch types for different garment styles and purposes	K5

Pre Requisite: Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S									M			M	
CO2	S	S	S										M	
CO3	S	S	M	S									S	M
CO4		S	S			M							S	M
CO5			S	S		M							S	M
CO6		S	M	M		M						M	S	

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignments 3. End Semester Exam 4. Model exams, Lab exercises & End semester exams for lab component	1.Course Exit Survey

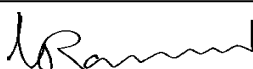
9 Hours

SEAMS: Definition, Types of seams – Federal classifications, factors to be considered in the selection of seam, seam finishes and seam defects.

STITCHES: Definition, stitch classes - Federal classifications, stitch parameters, factors to be considered in the selection of stitches. Stitching defects.

9 Hours

FULLNESS: Definition, types- Darts – single, double pointed darts, Tucks - pin tucks, cross



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tucks, piped tucks, shell tucks. Pleats- knife pleats, box pleats, invertible box pleats, Kick pleats. Flare, godets, gathers, shirring, single, double frills and flounces.

HEMMING TECHNIQUES: Definition, types - machine stitched hem and hand-stitched hem.

NECKLINE FINISHES- preparation of bias strip, bias facing, bias binding, fitted facing and French binding.

9 Hours

SLEEVES: Types and construction of sleeves - plain, puffs, gathered, bell, bishop, circular, leg-o-mutton, Magyar sleeves, Raglan sleeves, kimono.

YOKES: Definition – Selection of yoke design, Types and construction of yoke - Simple yoke – yokes with or without fullness, midriff yokes, panel yokes, partial yokes.

9 Hours

COLLARS: Classification of collars, Types of collars– flat collars (peter pan collar, scalloped, flared, puritan collar, sailor collar) convertible collar, shirt collar with stand, Mandarin collar, shawl collar.

POCKETS: Types– patch pocket – creating variations, set in pocket- bound pocket, welt pocket, pocket in a seam- front hip pocket, Attaching flap to a patch pocket.

9 Hours

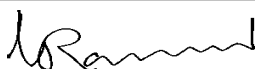
PLACKETS: Inconspicuous plackets - continuous bound placket, two-piece placket, zipper placket – slot seam & lapped seam. Conspicuous plackets - Tailored or Kurtha placket, fly opening – button and buttonhole method, Zipper method.

FASTENERS: Types - button and buttonholes, hooks and eye, snaps, Velcro, eyelets, cords and rivets

Theory: 45	Tutorial: 0	Practical: 0	Project: 0	Total: 45 Hours
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REFERENCES

1. Mary Mathews, “Practical Clothing Construction Part I and II”, Paprinpack, Madras, 2000.
2. Ruth E.Glock, Grace I. Kunz, “Apparel Manufacturing – Sewn Product Analysis”, Pearson/Prentice Hall, 2005
3. Claire Shaeffer, “Sewing for the Apparel Industry”, Prentice-Hall Inc, New Jersey, 2001
4. Gerry Cooklin, “Garment Technology for Fashion Designers”, Blackwell Science Ltd., 2001.
5. Leila Aitken., “Step By Step Dress Making Course”, BBC Books, 1992
6. Amaden. C. and Crawford, A guide to Fashion Sewing, Fairchild Publications, 2001.
7. Fan.J., Yu.W., and Hunter.L., “Clothing Appearance and Fit: Science and Technology”, The Textile Institute, Manchester, 2004
8. Joseph. H andAmstrong, “Pattern Making for Fashion Design”, Pearson Education Inc, 2005.
9. Sumathi,G.J, “ Elements of Fashion and Apparel Design”, New Age International (P) Ltd, 2005.
10. Federal standards, stitches and seams



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LAB COMPONENT CONTENTS

LIST OF EXPERIMENTS

1. Preparing samples for seams and stitches – Plain, top stitch, lapped, slot, French, piped and even basting, uneven basting, running, back, overcasting, hemming
2. Preparing samples for Fullness - Darts, Tucks
3. Preparing samples for Fullness - Pleats, Gathers
4. Preparing samples for Fullness -, Flares, Godets, Frills, ruffles
5. Preparing samples for Necklines – Bias facing, Bias Binding and Fitted facing
6. Preparing samples for Sleeves – Plain, Puff at Both Sides, Raglan, Kimono
7. Preparing samples for collars – Peter Pan Collar, Full Shirt Collar, Shawl Collar
8. Preparing samples for pockets – Patch Pocket, Bound Pocket and Front Hip Pocket
9. Preparing samples for plackets – Continuous Bound Placket, Two Piece Placket
10. Preparing samples for plackets - Tailors Placket, Fly Opening with Zipper

Theory: 0 Tutorial: 0

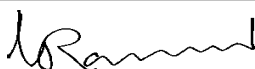
Practical: 30

Project: 0

Total: 30 Hours

REFERENCES

1. Mary Mathews, “Practical Clothing Construction Part I and II”, Papirnpack, Madras, 2000.
2. Ruth E. Glock, Grace I. Kunz, “Apparel Manufacturing – Sewn Product Analysis”, Pearson/Prentice Hall, 2005
3. Claire Shaeffer, “Sewing for the Apparel Industry”, Prentice-Hall Inc, New Jersey, 2001
4. Gerry Cooklin, “Garment Technology for Fashion Designers”, Blackwell Science Ltd., 2001.
5. Leila Aitken., “Step By Step Dress Making Course”, BBC Books, 1992



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U18INI3600 ENGINEERING CLINIC – III

L	T	P	J	C
0	0	4	2	3

Course objectives

- To help the students look into the functioning of simple to complex devices and systems
- To enable the students to design and build simple systems on their own
- To help experiment with innovative ideas in design and team work
- To create an engaging and challenging environment in the engineering lab

Course Outcomes

After successful completion of this course, the students should be able to:

CO1: Identify a practical problems and find a solution

CO2: Understand the project management techniques

CO3: Demonstrate their technical report writing and presentation skills

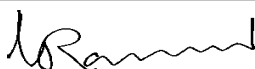
Pre-requisite:

1. U18INI 2600 Engineering Clinic II

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	S	S	S	S	M	W		S			S		
CO2											S			
CO3										S				

Course Assessment methods:

Direct	Indirect
1. Project reviews 50%	1. Course Exit Survey
2. Workbook report 10%	
3. Demonstration& Viva-voce 40%	



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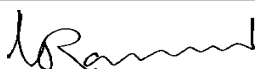
Content:

The course will offer the students with an opportunity to gain a basic understanding of computer controlled electronic devices and apply the concepts to design and build simple to complex devices. As a practical project based embedded course, the students will be taught the concepts using a variety of reference material available in the public domain. While the course will start with formal instruction on hardware, programming and applications, the major portion of the course will provide the students with ample opportunity to be innovative in designing and building a range of products from toys to robots and flying machines. In the III semester, students will focus primarily on Design project combining concepts learnt in Engineering clinics I and II

GUIDELINES:

1. Practical based learning carrying credits.
2. Multi-disciplinary/ Multi-focus group of 5-6 students.
3. Groups can select to work on a specific tasks, or projects related to real world problems.
4. Each group has a faculty coordinator/Instructor who will guide/evaluate the overall group as well as individual students.
5. The students have to display their model in the 'Engineering Clinics Expo' at the end of semester.
6. The progress of the course is evaluated based on reviews and final demonstration of prototype.

Total Hours: 90



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U18VEP3503**FAMILY VALUES**
(Mandatory)

L	T	P	J	C
0	0	2	0	0

Course Outcomes

After successful completion of this course, the students should be able to

- CO 1:** Develop skills in maintaining the harmony in the family.
CO 2: Create impulsive activities for healthy family
CO 3: Be receptive to troubled Individuals
CO 4: Gain healthy life by practicing Kundalini Yoga & Kayakalpa
CO 5: Possess Empathy among family members.
CO 6: Reason the life and its significance

Pre-requisites :

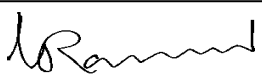
1. U18VEP1501 / PERSONAL VALUES
2. U18VEP2502 / INTERPERSONAL VALUES

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1									S			
CO2							M					
CO3										M		
CO4												S
CO5						S						
CO6								M				

Course Assessment methods

Direct
1.Group Activity / Individual performance and assignment 2.Assessment on Value work sheet / Test
Indirect
1. Mini project on values / Goodwill Recognition

Values through Practical activities:

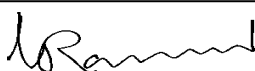

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- 1. Family system:** Introduction to Family Values – elements of family values - Adjustment, Tolerance, Sacrifice - Family structure in different society – work life balance.
- 2. Peace in Family :**Family members and their responsibility - Roles of parents, children, grand parents -. Respectable women hood
- 3. Core value:Empathy:** Unconditional love - Respect - Compassion - sacrifice–Care &share - helping – emotional support- hospitality – cleanliness
- 4. Blessing:** Blessing - methods - Vibration effect - Benefits - Reason for misunderstanding in the Family and resolution through blessings.
- 5. Healthy Family:** Good relationship with neighbors - Counseling - Simplified Kundalini Yoga - Kaya Kalpa Yoga

Workshop mode

REFERENCES

1. FAMILY - www.download.nos.org/331courseE/L-13%20FAMILY.pdf
2. FRAMEWORK FOR ACTION ON VALUES EDUCATION IN EARLY CHILDHOOD – UNESCO – PDF – www.unesdoc.unesco.org/images/0012/001287/128712e.pdf
3. TRUE FAMILY VALUES Third Edition - Tparents Home
www.tparents.org/Library/Unification/Books/TFV3/_TFV3.pdf
4. FAMILY VALUES IN A HISTORICAL PERSPECTIVE - The Tanner Lectures on
www.tannerlectures.utah.edu/_documents/a-to-z/s/Stone95.pdf
5. PROBLEMS OF INDIA'S CHANGING FAMILY AND STATE ... - the United Nations
- www.un.org/esa/socdev/family/docs/egm09/Singh.pdf



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U18CHT3000

**ENVIRONMENTAL SCIENCE AND
ENGINEERING
(Common to All branches)**

L	T	P	J	C
3	0	0	0	0

Course Outcomes (COs)

After successful completion of this course, the students would be able to

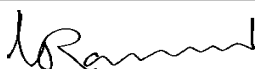
- CO 1: Analyze the impact of engineering solutions in a global and societal context.
 CO 2: Discuss contemporary issues that results in environmental degradation and would attempt to provide solutions to overcome those problems.
 CO 3: Highlight the importance of ecosystem and biodiversity.
 CO 4: Consider issues of environment and sustainable development in his/her personal and professional undertakings.
 CO 5: Paraphrase the importance of conservation of resources.
 CO 6: Play an important role in transferring a healthy environment for future generations.

CO-POs & PSOs Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes (POs) & Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1		M					S		M					
CO2						M				M				
CO3							M							
CO4						M	S							L
CO5							S							
CO6			L				S					M		

Course Assessment methods

Direct	Indirect
1. Internal Test I 2. Internal Test II 3. Assignment 4. Group presentation	Course end survey

**INTRODUCTION TO ENVIRONMENTAL STUDIES
AND NATURAL RESOURCES**

14 Hours


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Definition, scope and importance – Need for public awareness – Forest resources: Use and over-exploitation, deforestation, case studies – Timber extraction, mining, dams and their effects on forests and tribal people. Water resources: Use and overutilization of surface and ground water, conflicts over water, dams – benefits and problems – Water conservation, rain water harvesting, watershed management. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, case studies. Energy resources: Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources, case studies.

Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification, Wasteland reclamation – Role of an individual in conservation of natural resources.

ECOSYSTEMS AND BIODIVERSITY ECOSYSTEM:

9 Hours

Concept of an ecosystem – Structure and function of an ecosystem: Producers, consumers and decomposers, Food chain, Food web, Energy flow in the ecosystem and Ecological pyramids – Ecological succession – Introduction, types, characteristic features, structure and function of the (a) Forest ecosystem (b) Grassland ecosystem (c) Desert ecosystem (d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

BIODIVERSITY: Introduction to Biodiversity – Definition: genetic, species and ecosystem diversity – Bio geographical classification of India – Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic values – 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.

ENVIRONMENTAL POLLUTION

8 Hours

Definition – Causes, effects and control measures of: (a) Air pollution – Organic and inorganic pollution – cyclone separator, electrostatic precipitator (b) Water pollution (c) Heavy metal pollution (d) Noise pollution (e) Thermal pollution (f) Nuclear hazards – Role of an individual in prevention of pollution – Pollution case studies – Solid waste and hazardous Management: Causes, effects and control measures from factories, small scale and large scale industries – Waste minimization – Disaster management: floods, earthquake, cyclone and landslides.

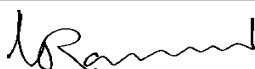
SOCIAL ISSUES AND THE ENVIRONMENT

7 Hours

From Unsustainable to Sustainable development – Urban problems related to energy – Resettlement and rehabilitation of people; its problems and concerns, case studies – Issues and possible solutions – Climate change, global warming, acid rain, ozone layer depletion – Environment Protection 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 – Human Rights.

HUMAN POPULATION AND THE ENVIRONMENT

7 Hours



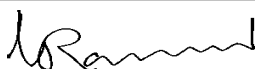
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Population growth and explosion – Welfare Program – Environment and human health – Communicable disease – Role of Information Technology in Environment and human health – Case studies.

Theory: 45 Hours	Total: 45 Hours
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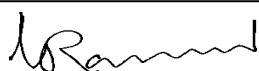
REFERENCES

1. G. Tyler Miller and Scott Spoolman, 'Environmental Science', Fourteenth Edition, Brooks Cole, 2012.
2. Gilbert M. Masters and Wendell P. Ela, 'Introduction to Environmental Engineering and Science', Third Edition, Pearson Education, 2013.
3. Bharucha Erach, 'The Biodiversity of India', Mapin Publishing Pvt. Ltd., Ahmedabad, 2002.
4. Trivedi R.K and P.K.Goel, 'Introduction to Air Pollution', Techno-Science Publications, 2003.
5. Trivedi R.K., 'Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards', Vol. I and II, Enviro Media, 1996.
6. Cunningham, W.P.Cooper and T.H.Gorhani, 'Environmental Encyclopedia', Jaico Publication House, Mumbai, 2001.
7. Wager K.D., 'Environmental Management', W.B. Saunders Co., Philadelphia, USA, 1998.
8. Colin R. Townsend, Michael Begon and John L. Harper, 'Essentials of Ecology', Third Edition, Blackwell Publishing, 2008.



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SEMESTER IV



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U18MAT4102

NUMERICAL METHODS

(Common to FT/BT/TXT)

L	T	P	J	C
3	1	0	0	4

Course outcomes**After successful completion of the course, the student would be able to:**

C01: Solve a set of algebraic equations representing steady state models formed in engineering problems

C02: Fit smooth curves for the discrete data connected to each other or to use interpolation methods over these data tables

C03: Find the trend information from discrete data set through numerical differentiation.

C04: Estimate integrals from discrete data through numerical methods.

C05: Predict the system dynamic behaviour through solution of ODEs modeling the system

C06: Solve PDE models representing spatial and temporal variations in physical systems through numerical methods.

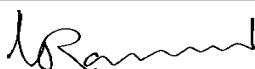
Pre-requisite:

Nil.

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02
C01	S	S											M	
C02	S		S	S									M	
C03	S	S	M										M	
C04	S	S		S									W	
C05	S	S	M	M									W	
C06	S												W	

Course Assessment methods:

Direct	
1.	Continuous Assessment Test I, II
2.	Open book test; Cooperative learning report, Assignment; Journal paper review, Group Presentation, Project report, Poster preparation, Prototype or Product Demonstration etc. (as applicable)
3.	End Semester Examination



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Indirect
1. Course-end survey

NUMERICAL SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS

9+3 Hrs

Solution of nonlinear equations - False position method – Fixed point iteration – Newton Raphson method for a nonlinear equations and a system of equations - Solution of linear system of equations by Gaussian elimination, Gauss Jordan method, Gauss Jacobi method, Gauss Seidel method - Matrix Inversion by Gauss Jordan method –Largest eigenvalue of a matrix by Power method.

CURVE FITTING AND INTERPOLATION

9+3Hrs

Curve fitting – Method of least squares - Newton’s forward and backward difference interpolation – Divided differences – Newton’s divided difference interpolation - Lagrange’s interpolation – Inverse interpolation.

NUMERICAL DIFFERENTIATION AND INTEGRATION

9+3Hrs

Numerical differentiation by using Newton’s forward, backward and divided differences – Numerical integration by Trapezoidal and Simpson’s $1/3^{\text{rd}}$ and $3/8^{\text{th}}$ rules – Numerical double integration.

NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS

9+3Hrs

Initial value problems - Single step methods: Taylor’s series method – Truncation error – Euler and Improved Euler methods – Fourth order Runge – Kutta method – Multistep method: Milne’s predictor - corrector method.

NUMERICAL SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS

9+3Hrs

Finite difference techniques for the solution of two dimensional Laplace’s and Poisson’s equations on rectangular domain–Solution of one dimensional heat equation using Bender Schmidt and Crank Nicholson difference schemes –Solution of one dimensional wave equation by explicit scheme.

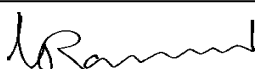
Theory :45Hours

Tutorial :15 Hours

Total:60Hours

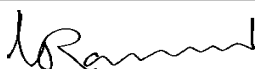
REFERENCES:

1. Kandasamy P., Thilagavathy K. and Gunavathy K., “Numerical Methods”, S.Chand



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- Co. Ltd., New Delhi, 2007.
2. Steven C. Chapra and Raymond P. Canale, "Numerical Methods for Engineers with Programming and Software Applications", McGraw-Hill, 2004.
 3. John H. Mathews and Kurtis D. Fink, "Numerical Methods using Matlab", Prentice Hall of India, 2004.
 4. Gerald C. F. and Wheatley P.O, "Applied Numerical Analysis", Pearson Education Asia, New Delhi, 2002.
 5. Sastry S.S, "Introductory Methods of Numerical Analysis", Prentice Hall of India Pvt Ltd, New Delhi, 2003.



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U18MET4007

BASICS OF MECHANICAL ENGINEERING

Course Outcomes

After successful completion of this course, the students should be able to

L	T	P	J	C
3	0	0	0	3

CO1	Explain principles of thermodynamics, renewable energy and power plants
CO2	Explain the working principle and combustion characteristics of IC Engines.
CO3	Explain the working principle of VCR & VAR systems.
CO4	Understand and explain the various manufacturing processes and power transmission
CO5	Demonstrate basic manufacturing process
CO6	Explain various types of power transmission

Pre Requisite : Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PSOs	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	S													
CO 2		M												
CO 3		M												
CO 4	W													
CO 5	M													
CO 6	M													

Course Assessment Methods

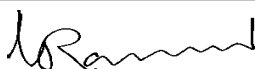
Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1.Course Exit Survey

Course Content

LAWS OF THERMODYNAMICS

9 Hours

First law of thermodynamics – statement and application, steady flow of energy equation, Second law of thermodynamics. Heating and Expansion of Gases, Expression for work done, internal energy, hyperbolic and polytropic processes. Properties of Steam, Dryness fraction, latent heat, total heat of wet steam.



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POWER PLANTS**9 Hours**

Classification of Power Plants, Steam, Diesel, nuclear and Hydro Power Plants. Types of turbines, working of a single stage impulse and reaction turbine.

Alternate Sources of Energy: (Solar, Wind, Tidal, Geothermal, Ocean Thermal Energy Conversion (OTEC). Wind/ Solar grid fed power plant, Solar /Water air heaters – Techno-economics of power plants and energy sources.

INTERNAL COMBUSTION ENGINES**9 Hours**

Classification of IC engines, Main components of IC engines, working of a 4 stroke and 2 stroke petrol and diesel engine, differences between 4 stroke and 2 stroke engine.

Refrigeration and Air Conditioning: principle of vapour compression and vapour absorption refrigeration systems. Air conditioning, terminology and classifications. Humidification and Air conditioning.

MANUFACTURING PROCESSES**9 Hours**

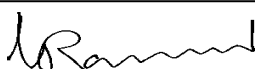
Basic principles of Arc and Gas Welding, Soldering and Brazing, Extrusion, Forging, Rolling, and Drawing Processes. Milling – Types, Operations and Equipments.

POWER TRANSMISSION**9 Hours**

Types of drives, belt drives – flat and V belts, rope drives, chain drive, gear drives – spur, helical, bevel and worm gears (Descriptive treatment only) – gear trains, simple and compound.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Shanmugam G, Palanichamy M S, “Basic Civil and Mechanical Engineering”, Tata McGraw Hill Company, New Delhi, 2nd Edition, 2000.
2. Venugopal.K. and Prabu Raja, “Basic Mechanical Engineering”, Anuradha Publications, Chennai, 2007.
3. Sarkar B. K., “Thermal Engineering” Tata McGraw Hill Company, New Delhi. 2000
4. Rao N., “Manufacturing Technology: Foundry, Forming and Welding”, Tata McGraw Hill Co., New Delhi, Paperback Edition. 1998 James Brown, “Advanced Machining Technology Handbook”, McGraw Hill, New York, 1998



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U18FTT4001 FABRIC FORMATION TECHNOLOGY**Course outcomes**

After successful completion of this course, the students should be able to

L	T	P	J	C
3	0	0	0	3

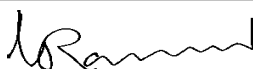
CO	Description	Bloom's taxonomy level
CO1	Acquaint with the objectives and acquire knowledge of working principles of machinery used for preparation of yarn for weaving	K2
CO2	Describe the working principle of beam preparatory machines for weaving.	K2
CO3	Acquire knowledge in the selection of sizing ingredients for different fibres.	K4
CO4	Understand the objectives and working principles of shuttle and shuttleless looms	K2
CO5	Develop knowledge in the selection of suitable preparatory processes for weaving	K4
CO6	Acquire knowledge on nonwovens manufacturing techniques and its applications.	K2

Pre Requisite:**1. U18FTT1001 Fibre Science**

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	S											M	
CO2	S	S											M	
CO3		S											M	W
CO4		S											W	M
CO5		S	S		S								M	M
CO6		S	S										M	

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1.Course End Survey



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COURSE CONTENT**YARN PREPARATION FOR WEAVING****9 Hours**

Process Flow–objectives of winding; principles of cheese and cone winding machines - Pirn winding. Concepts in yarn clearing – mechanical, optical and electronic clearers; knotters and splicers; Yarn quality requirements for weaving.

BEAM PREPARATION FOR WEAVING: WARPING AND SIZING**9 Hours**

Objectives of warping, material flow in beam warping and creels used in warping machines; sectional warping machines.

Objectives of sizing; sizing materials and recipes used for different types of fibers; sizing machines; control systems used in sizing machine; sizing filament yarns; concept of single end sizing.

SHUTTLE WEAVING**9 Hours**

Objectives and working principles– primary, secondary and auxiliary motions, Mechanisms of Tappet, Dobby and Jacquard weaving. Types of Shuttle looms – Handloom, Non-automatic, Semi-automatic and Automatic looms; Drop box loom; Terry loom.

SHUTTLELESS WEAVING**9 Hours**

Basic principles of various shuttleless weaving machines – Projectile, Rapier, Air-jet, Water-jet, Multi-phase; productivity and techno-economics of these machines. Computerized fabric inspection, Loom data system.

NONWOVENS**9 Hours**

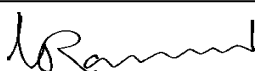
Definition. Raw materials for nonwovens – natural and man-made fibers, binders; classification of nonwovens, manufacturing methods - Needle punching, chemical bonding, spun bonding, thermal bonding, melt-blown process, hydro-entangling. Applications of non-wovens.

Total: 45 Hours**REFERENCES**

1. Allan Ormerod, Walter S.Sondhelm, Weaving-Technology and Operations, Textile Institute Pub., 1995.
2. Lord P.R. and Mohammed, Weaving: Conversion of yarn to fabric, M.H. MerrowPub.CoLtd., U.K.,1998.
3. Talukdar, Introduction to winding and warping, MahajanPub. (P)Ltd., 1998.
4. Talukdar, Wadekar and Ajgaonkar, Sizing–Materials, methods and machines, 2nd edition, Mahajan Pub. (P) Ltd.,1998.
5. Gokarneshan N., Weaving Preparation Technology, Abhishek Pub., 2009
6. Talukdar, SriramuluandAjgaonkar, Weaving–Machines, Mechanisms, Management, Mahajan Pub. (P) Ltd.,1998
7. Albrecht. W, Fuchs. H, Kittelmann and Walter, “Nonwoven Fabrics- Raw Materials, Manufacture, Applications, Characteristics, Testing Processes”, Wiley-VLH, 2002, Weinheim. ISBN- 3-527-30286-7

OTHER REFERENCES

1. Tappet Shedding Mechanism: <https://www.youtube.com/watch?v=3aL3dAy2FEM>
2. Tappet Shedding Mechanism: <https://www.youtube.com/watch?v=W5BRDDhR0dI&t=53s>
3. Jacquard Shedding mechanism: https://www.youtube.com/watch?v=awGjOGO_Mis
4. Types of weft insertion: https://www.youtube.com/watch?v=s0W0iDj7_hc&t=40s



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U18FTT4002 APPAREL MACHINERY AND EQUIPMENT

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Acquire knowledge in different methods of spreading of fabrics with respect to type of fabric and to Evaluate the marker efficiency.	K5
CO2	Describe the basic principles of working of different types of cutting machineries used in apparel production	K2
CO3	Test the settings and adjustment parts of sewing machines	K4
CO4	Develop skills for recognize various parts and their working principles in advanced garment sewing machines.	K3
CO5	Acquire knowledge on special machineries used in apparel production	K3
CO6	Express the importance and the audit of sewing machinery maintenance.	K2

Pre Requisite: NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PO1 2	PSO 1	PSO 2
CO1	S	M	M					W				M	S	M
CO2								W				M	S	M
CO3	S	S	S					W				M	S	M
CO4								W				M	S	M
CO5								W				M	S	M
CO6								W				M	S	M

Course Assessment methods:

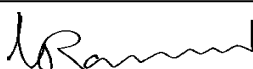
Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course End Survey

Course Content**SPREADINGMACHINES****8 Hours**

Types of Fabric Packages. Types of Fabrics – One Way– Two Way Fabrics – Their effect on spreading. Methods of Fabric spreading. Spreading equipments– Computerized spreaders. Marker planning, Marker efficiency, Factors affecting marker efficiency. Marker duplicating methods – Computer aided marker making.

CUTTINGMACHINES**8 Hours**

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



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machines. Maintenance of cutting machines. Common defects in cutting and their remedies. Latest Developments.

SEWINGMACHINE- SNLS

10 Hours

Basic parts of sewing machine – primary and auxiliary parts and their functions. Bobbin case/Bobbin hook, Throat plate – Takeup devices – Tensioners – Feed dog – Pressure foot. Types of needles – Parts of needles 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.

MULTI THREADSEWING MACHINES

10 Hours

Over lock machines - Types of Over lock machines. Parts and their functions. Threading diagram for over lock machines. Stitch Cycle Diagram for 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– Stitch cycle diagram. Adjustment of parts – Needle height, feed dog height, differential feed ratio, loopers. Maintenance of flat lock machines. Defects and Remedies.

SPECIAL PURPOSESEWING MACHINES

9 Hours

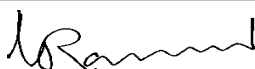
Introduction to different special purpose sewing machines. Basic working of Feed of Arm, Button Hole sewing, button sewing, Bar tack, blind stitch machines. Embroidery sewing machines. Latest developments in sewing machines. Sewing machine maintenance - Maintenance schedule for various machines. Maintenance audit.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Harold Carr and Barbara Latham, "The Technology of Clothing Manufacture", Om Book Service, 2002.
2. Shaeffer Claire, "Sewing for the Apparel Industry", Prentice Hall, New Jersey, 2001.
3. Singer, "Sewing Lingerie", Cy De Cossel Incorporated, 1991.
4. Laing R.M. and Webster J, "Stitches and Seams", The Textile Institute, Manchester, 1999
5. Technical Advisory Committee of AAMA, "A New Look at Apparel Mechanization", 1978.
6. Jacob Solinger, "Apparel Production Handbook", Reinhold Publications, 1998



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U18FTI4203 APPAREL DESIGN AND DEVELOPMENT

L	T	P	J	C
3	0	2	0	4

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Acquire knowledge on basic principles in designing and developing garment patterns.	K2
CO2	Developing designing U18FTT4202 skills in preparation of garments by implementing the various measurements for children's, women's and men's garments.	K3
CO3	Developing skills in pattern development and construction methods for children's, women's and men's garments.	K6
CO4	Trace the knowledge on the different varieties of woven and knitted garments.	K3
CO5	Assess the suitability of garment patterns, fabrics, seams to fit the individuals	K5
CO6	Assess the comfort ability parameters on woven and knitted garments	K3

Pre Requisite :

U18FTI3202 Concepts of Fashion & Design

U18FTT3003 Pattern making and Adaptation

U18FTT3004 Garment components fabrication

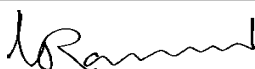
CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
Cos	Programme Outcomes(Pos)												PSO-1	PSO-2
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		
CO1	S	M											M	
CO2	S	S	M						M				M	M
CO3		S	S	S					M				S	M
CO4	M	S	S	S									M	
CO5	M		M	S					S	W	M	M	S	M
CO6			M	S					S	W	M	M	S	

Course Assessment methods:

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam 5. Model exams, Lab exercises & End semester exams for lab component	1.Course Exit Survey

THEORY COMPONENT CONTENT**CHILDREN'S WEAR****10 Hours**

Designing and pattern development- measurements-standard size charts for children's wear. Quality requirements for selecting suitable fabric, seams and stitches for children wear. Step-by-step garment drafting process and construction sequence – Frocks- A-line, summer, yoke, baba suit



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WOMEN'S WOVEN WEAR**10 Hours**

Designing and pattern development – measurements - standard size charts for women's wear. Quality requirements for selecting suitable fabric, seams and stitches for women's wear. Step-by-step garment drafting procedure and construction sequence – ladies kurti, churidar, skirts - plain, gored, pleated and blouses – plain blouse, raglan blouse, katori blouse.

WOMEN'S KNIT WEAR**9 Hours**

Designing and pattern development- measurements – standard size charts for women's knitwear. Step-by-step garment drafting procedure and construction sequence-corsets, camisole, nighty and dresses - princess line, empire line, tent dress and maternity wear.

MEN'S WOVEN WEAR**9 Hours**

Designing and pattern development – measurements – standard size charts for men's wear. Quality requirements for selecting suitable fabric, seams and stitches for men's wear. Step-by-step garment drafting procedure and construction sequence –Trousers-pleated, jeans, cargos, half sleeve shirt and single breasted coat.

MEN'S KNIT WEAR**7 Hours**

Designing and pattern development – measurements – standard size charts for men's knitwear. Step-by-step garment drafting procedure and construction sequence – elastic shorts, briefs and vests.

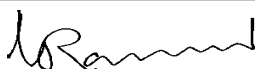
Theory: 45	Tutorial: 0	Practical: 0	Project: 0	Total: 45 Hours
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REFERENCES

1. Helen Joseph and Armstrong, "Pattern Making for Fashion Design", Pearson Education, 2005.
2. Winifred Aldrich, "Metric Pattern Cutting for Men's Wear", Blackwell Science, 2000.
3. Winifred Aldrich, "Metric Pattern Cutting for Children's Wear and Baby Wear", 3rd Edition, Black well Science, 2001.
4. Singer, "Sewing Pants That Fit", Cowles Creative Publishing Inc., 1989.
5. McKelvey Kathryn, "Fashion Source Book", Black well Science, 1994
6. Gerry Cooklin, "Garment Technology ForFashionDesigners", Black well Science, 2000.
7. Claire Shaeffer, "Fabric Sewing Guide", Chilton Book Company - Radnor, Pennsylvania.

LAB COMPONENT CONTENTS**LIST OF EXPERIMENTS**

1. Designing and developing pattern for Baby set- Jabla, panty, bib and bonnet.
2. Construction of Baby set- Jabla, panty, bib and bonnet
3. Designing and developing pattern for Rompers
4. Construction of Rompers
5. DesigningandDevelopingPatternforLadiesSkirtandTop
6. ConstructionofLadiesSkirtandTop
7. DesigningandDevelopingPatternforLadiesSalwar
8. ConstructionofLadiesSalwar
9. DesigningandDevelopingPatternforLadiesKameez



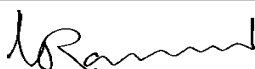
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10. Construction of Ladies Kameez

Theory: 0 Tutorial: 0 Practical: 30 Project: 0 Total: 30 Hours

REFERENCES

1. Helen Joseph and Armstrong, "Pattern Making for Fashion Design", Pearson Education, 2005.
2. Winifred Aldrich, "Metric Pattern Cutting for Men's Wear", Blackwell Science, 2000.
3. Winifred Aldrich, "Metric Pattern Cutting for Children's Wear and Baby Wear", 3rd Edition, Black well Science, 2001.
4. Singer, "Sewing Pants That Fit", Cowles Creative Publishing Inc., 1989.
5. McKelvey Kathryn, "Fashion Source Book", Black well Science, 1994
6. Gerry Cooklin, "Garment Technology For Fashion Designers", Black well Science, 2000.
7. Claire Shaeffer, "Fabric Sewing Guide", Chilton Book Company - Radnor, Pennsylvania.



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U18FTI4204 FABRIC STRUCTURE AND DESIGN**Course Outcomes**

After successful completion of this course, the students should be able to

L	T	P	J	C
3	0	2	0	4

CO1	Illustrate the elements of woven fabric design.	K3
CO2	Develop elementary fabric weave structures	K3
CO3	Explain colour theory and modifications of colour	K3
CO4	Develop creative weave designs using colour and weave effects	K3
CO5	Develop structures for complex woven fabric and analyse their construction.	K3
CO6	Explain the characteristics, properties and applications of woven fabric structures	K2

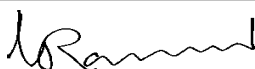
Pre-requisites

U18FTT3001 Yarn Technology

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
Cos	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S									M			M	
CO2		S	M							M			M	
CO3	S												M	
CO4			S							M			M	
CO5		S		M						S			M	
CO6		S											M	

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	2.Course Exit Survey



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THEORY COMPONENT CONTENT

BASIC WEAVES:

9 Hours

Elements of woven design, Construction of elementary weaves – plain – warp rib- weft rib – mat. Twills – modification of twills. Satin – sateen and their derivatives. Ordinary and Brighton honey comb– Huckaback. Crepe weaves.

BEDFORD CORDS AND MOCK LENO:

9 Hours

Plain faced – twill faced. Wadded – modifications. Welt - piques: wadded piques – Loose back and fast back welts and piques. Mock leno – Distorted mock –leno.

DOBBY AND JACQUARD: Basic Dobby, Jacquard Design. Spot figuring – arrangement of figuring for dobby and jacquard.

COLOR THEORY:

9 Hours

light and pigment theory – modification of color – color combination – application of colors – color and weave effects.

EXTRA FIGURED WEAVES: Extra warp and extra weft figuring. Extra warp and extra weft figuring with two colors.

BACKED FABRICS:

9 Hours

Warp and weft back – reversible and non-reversible.

PILE FABRICS: warp pile – fast wire pile – terry weaves - terry stripe – terry check. Weft pile: plain back – twill back velveteen – Lashed pile corduroy – Weft plush – Length, density and fastness of pile.

DOUBLE CLOTH:

9 Hours

Classification – self stitched – face to back – back to face – Combination face to back and back to face stitched double cloth. Wadded double cloth – weft and warp Wadded double cloth – Center warp & Weft Stitched double cloth.

Theory: 45

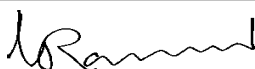
Tutorial: 0

Practical: 0

Total: 45 Hours

REFERENCES

1. Gokarneshan.N., “Fabric Structure and Design”, New Age International (P) Limited, 2011.
2. Grosicki Z., “Watson’s Textile Design & Color: Elementary weaves & Figure”, Blackwell Science, Commerce place, 1998.
3. H.Nisbet, “Grammar of textile Design”, Tarporevala sons & Co. Pvt. Ltd., 1994.
4. W.S. Murphy, “Textile weaving & Design”, Abhishek Publications, 2000



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LAB COMPONENT CONTENTS

Analysis of fabrics – Commercial name & fabric appreciation

Woven Fabric Analysis

1. Plain
2. Twill
3. Satin and Sateen
4. Huckaback
5. Honeycomb
6. Extra figured weaves
7. Jacquard design
8. Doublecloth
9. Pile fabric – Terry weave

Knitted fabric analysis

10. Single Jersey
11. Rib

Experiments beyond the syllabus should be conducted.

Theory: 0

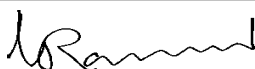
Tutorial: 0

Practical: 30

Total: 30

REFERENCES

1. Grosicki Z., “Watson’s Textile Design & Color: Elementary weaves & Figure”, Blackwell Science, Commerce place, 1998.
2. W.S. Murphy, “Textile weaving & Design”, Abhishek Publications, 2000.



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U18INI4600**ENGINEERING CLINIC – IV**

L	T	P	J	C
0	0	4	2	3

Course objectives

- To help the students look into the functioning of simple to complex devices and systems
- To enable the students to design and build simple systems on their own
- To help experiment with innovative ideas in design and team work
- To create an engaging and challenging environment in the engineering lab

Course Outcomes

After successful completion of this course, the students should be able to:

CO1: Identify a practical problems and find a solution

CO2: Understand the project management techniques

CO3: Demonstrate their technical report writing and presentation skills

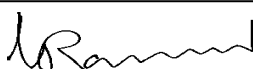
Pre-requisite:

1. U18INI 3600 Engineering clinic III

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	S	S	S	S	M	W		S			S		
CO2											S			
CO3										S				

Course Assessment methods:

Direct	Indirect
1. Project reviews 50%	1. Course Exit Survey
2. Workbook report 10%	
3. Demonstration & Viva-voce 40%	



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Content:

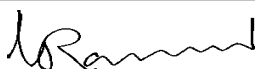
The course will offer the students with an opportunity to gain a basic understanding of computer controlled electronic devices and apply the concepts to design and build simple to complex devices. As a practical project based embedded course, the students will be taught the concepts using a variety of reference material available in the public domain. While the course will start with formal instruction on hardware, programming and applications, the major portion of the course will provide the students with ample opportunity to be innovative in designing and building a range of products from toys to robots and flying machines.

In the IV semester, students will focus primarily on reverse engineering project to improve performance of a product.

GUIDELINES:

1. Practical based learning carrying credits.
2. Multi-disciplinary/ Multi-focus group of 5-6 students.
3. Groups can select to work on a specific tasks, or projects related to real world problems.
4. Each group has a faculty coordinator/Instructor who will guide/evaluate the overall group as well as individual students.
5. The students have to display their model in the 'Engineering Clinics Expo' at the end of semester.
6. The progress of the course is evaluated based on reviews and final demonstration of prototype.

Total Hours: 90



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U18VEP4504**PROFESSIONAL VALUES**
(Mandatory)

L	T	P	J	C
0	0	2	0	0

Course Outcomes

After successful completion of this course, the students should be able to

CO 1: Develop the ethical values in both professional and personal life

CO 2: Develop ability to take decision to reinforce professional life

CO 3: Rational in professional skills required for diverse society

CO 4: Excel in ingenious attitude to congregate professional life

CO 5: Research into the professional stand

CO 6: Spruce an Individual with decorum to achieve professional life

Pre-requisites :

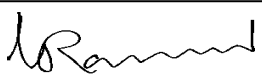
1. U18VEP1501 / PERSONAL VALUES
2. U18VEP2502 / INTERPERSONAL VALUES
3. U18VEP3503 / FAMILY VALUES

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1								S				
CO2				M								
CO3			S									
CO4												S
CO5								M				
CO6										M		

Course Assessment methods

Direct
1.Group Activity / Individual performance and assignment 2.Assessment on Value work sheet / Test
Indirect
1. Mini project on values / Goodwill Recognition

Values through Practical activities:


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1. Professional skills With Values: Positive Attitude, Adaptability, Responsibility, Honesty and Integrity, Self Esteem, & Self Confidence

2. Building Innovative work cultures: Creative thinking, Critical thinking, Conflict Resolution, Problem Solving, & Decision making

3. Professional Work Ethics: Types of Ethics, Etiquette, personality Grooming, Emotional quotient, Human Dignity, Safety & Role of Professional in Social Responsibility

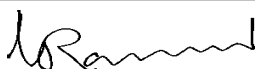
4. Engineering Ethics: Engineering Council of India - Objectives - Code of Ethics - Social responsibility - Professional Quality - Ethical issues - Effects - Strategy - Corruption, Consequences, Cures

5. Case studies in engineering ethics: Discussion of case studies relating to Public safety, health, welfare, Quality of product, Improper conduct by management, Product responsibility, Intellectual property

Workshop mode

REFERENCES

1. LEARNING TO DO SOURCEBOOK 3 - UNESCO-UNEVOC -PDF
www.unevoc.unesco.org/fileadmin/user_upload/pubs/LearningToDo.pdf
2. DECLARATION OF PROFESSIONAL VALUES AND ETHICAL STANDARDS
www.garda.ie/Documents/User/declarationvalues.pdf
3. KARMA YOGA - SWAMI VIVEKANANDA
www.vivekananda.net/PDFBooks/KarmaYoga.pdf
4. PROFESSIONAL ETHICS IN ENGINEERING - Sasurie College of Engineering
www.sasurieengg.com/.../GE2025%20Professional%20Ethics%20in%20Engineering.
5. ENGINEERING ETHICS CASE STUDY; Challenger
www.ucc.ie/en/processeng/staff/academic/ebyrne/.../PE1006PptNotesLect7.pdf



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U18INT4000

CONSTITUTION OF INDIA

(Mandatory course)

L	T	P	J	C
2	0	0	0	0

Course Outcomes:

After successful completion of this course, the students will be able to:

CO 1: Gain Knowledge about the Constitutional Law of India

CO 2: Understand the Fundamental Rights and Duties of a citizen

CO 3: Apply the concept of Federal structure of Indian Government

CO 4: Analyze the Amendments and Emergency provisions in the Constitution

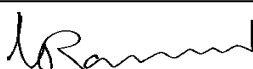
CO 5: Develop a holistic approach in their life as a Citizen of India

Pre-requisites :NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						M			W			S
CO2						S		S				M
CO3									M	S		W
CO4								W	M			M
CO5						M		M				S
CO6												

Course Assessment methods

Direct
1. Group Activity / Quiz/ Debate / Case studies 2. Class test / Assignment
Indirect
Surveys



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THEORY COMPONENT:

Module.1: Introduction to Indian Constitution 4 hours

Meaning of the constitution law and constitutionalism - Historical perspective of the Constitution and characteristics of the Constitution of India

Module.2: Fundamental Rights 8 hours

Scheme of the fundamental rights - Right to Equality - Fundamental Right under Article 19 - Scope of the Right to Life and Liberty - Fundamental Duties and its legal status - Directive Principles of State Policy – Its importance and implementation

Module.3: Federal Structure 8 hours

Federal structure and distribution of legislative and financial powers between the Union and the States - Parliamentary Form of Government in India - The constitutional powers and status of the President of India

Module.4: Amendment to Constitution

6 hours

Amendment of the Constitutional Powers and Procedure - The historical perspectives of the constitutional amendments in India

Module.5: Emergency Provisions

4 hours

National Emergency, President Rule, Financial Emergency Local Self Government Constitutional Scheme in India

Theory: 30	Tutorial: 0	Practical: 0	Project: 0	Total: 30 hours
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REFERENCES

1. Constitution of India - Ministry of Law & Justice – PDF format
awmin.nic.in/coi/coiason29july08.pdf

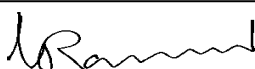
2. **Introduction to the Constitution of India by Durgadas Basu**

3. The Constitution of India – Google free material -
www.constitution.org/cons/india/const.html

4. Parliament of India – PDF format
download.nos.org/srsec317newE/317EL11.pdf

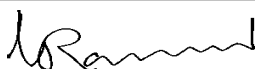
5. The Role of the President of India – By Prof. Balkrishna

6. Local Government in India – E Book - Pradeep Sachdeva
https://books.google.com/books/.../Local_Government_in_In...



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SEMESTER V



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U18MAT5102 PROBABILITY AND STATISTICS**(FT)**

L	T	P	J	C
3	1	0	0	4

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Compute measures of central tendencies, dispersion and correlation between variables, and predict unknown values using regression.

CO2: Understand and apply the concept of probability and random variables.

CO3: Construct probabilistic models for observed phenomena through distributions, which play an important role in many engineering applications.

CO4 :Perform hypothesis testing and interpret the results.

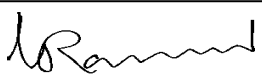
CO5: Understand the principles of design of experiments and perform analysis of variance.

CO6: Sketch control charts and comment on the process control.

Pre-requisites : Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S							M	M		M
CO2	S	S							M	M		M
CO3	S	S							M	M		M
CO4	S	S							M	M		M
CO5	S	S							M	M		M
CO6	S	S							M	M		M

Course Assessment methods


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Direct
1. Continuous Assessment Test I, II
2. Open book test; Cooperative learning report, Assignment; Journal paper review, Group Presentation, Project report, Poster preparation, Prototype or Product Demonstration etc. (as applicable)
3. End Semester Examination
Indirect
1. Course-end survey

STATISTICAL MEASURES

9 +3 Hours

Measures of central tendency: Arithmetic Mean, Median and Mode – Measures of variation: Range, Mean deviation, Standard deviation and Coefficient of variation – Correlation (Discrete Data) – Karl Pearson's Correlation coefficient – Spearman's Rank Correlation – Regression lines (Discrete Data).

PROBABILITY AND RANDOM VARIABLES

9+3 Hours

Axioms of probability - Conditional probability – Total probability – Bayes' theorem - Random variable – Distribution function – properties – Probability mass function – Probability density function – moments - Moment Generating functions.

STANDARD DISTRIBUTIONS

9+3 Hours

Binomial, Poisson and Normal distributions – Moments, Moment Generating functions and properties - Fitting of Binomial and Poisson distributions

TESTING OF HYPOTHESIS

9+3 Hours

Testing of hypothesis for large samples (single mean, difference of means, single proportion, difference of proportions) – Small samples tests based on t and F distributions (single mean, difference of means, paired *t*- test and variance ratio test) – Chi-square test for independence of attributes and goodness of fit

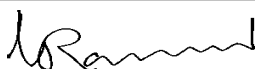
DESIGN OF EXPERIMENTS

5 +2 Hours

Analysis of Variance (ANOVA) – Completely Randomized Design (CRD) – Randomized Block Design (RBD) – Latin Square Design (LSD).

STATISTICAL QUALITY CONTROL

4 +1 Hours



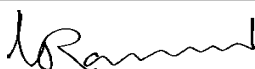
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Concept of process control - Control charts for variables – Mean and Range charts – Control charts for attributes – p, np, c – charts.

Theory: 45 Tutorial: 15 Practical: 0 Project: 0 Total: 60 Hours

REFERENCES

1. Veerarajan T., Probability, Statistics and Random Processes, Tata McGraw Hill, 3rd edition, 2008.
2. Gupta S. P, Statistical Methods, Sultan Chand & Sons Publishers, 2014.
3. Johnson R. A., Miller & Freund's "Probability and Statistics for Engineers", Sixth Edition, Pearson Education, Delhi, 2000.
4. Gupta.S.C and Kapoor V.K, Fundamentals of Mathematical Statistics, 11th extensively revised edition, Sultan Chand & Sons, 2007.
5. Walpole R. E., Myers S.L. & Keying Ye, "Probability and Statistics for Engineers and Scientists", Pearson Education Inc, 9th edition, 2012.
6. Gupta S.C, and Kapur V.K, Fundamentals of Applied Statistics, Sultan Chand, New Delhi, 4th Edition, 2014.
7. Charles Henry Brase and Corrinne Pellillo Brase "Understandable Statistics", D.C. Heath and Company, Toronto, 9th edition, 2007.



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U18FTI5201 TEXTILE CHEMICAL PROCESSING**Course Outcomes**

After successful completion of this course, the students should be able to

L	T	P	J	C
3	0	2	0	4

CO1	Acquire knowledge and explain the chemical processing of cotton and blended materials.	K3
CO2	Summarize the suitable process to process the fiber, yarn and fabrics through preparatory and dyeing processes.	K3
CO3	Analyze the parameters and Deciding the recipes for chemical processing of different materials.	K4
CO4	Acquire Knowledge and Analyze the parameters for printing techniques	K3
CO5	Testing and evaluation on the eco-friendly processes and the effluent treatments.	K4
CO6	Summarize the pollutants, banned and toxic chemicals and amines.	K2

Pre Requisite:

Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	W					S	S						M	M
CO2	W					S	S						M	M
CO3			M			S	S						M	M
CO4						S	S						M	M
CO5						S	S						M	M
CO6						S	S						M	M

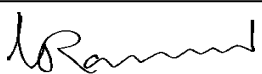
Course Assessment methods:

Direct	Indirect
1.Internal tests 2.Assignment 3.Group Presentation 4.End Semester Exam	1.Course Exit Survey

Course Content**PRETREATMENTS****9 Hours**

Introduction to wet processing. Process sequence in wet processing for woven and knits. Singeing –electric and gas singeing. Desizing–chemical and enzymatic. Scouring –alkaline and enzymatic. Bleaching – hypo chlorite and peroxide bleaching, optical whitening. Mercerizing–tension, tensionless and tubular mercerization. Liquid ammonia treatment.

DYEING


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12 Hours

Introduction-Dyeing equipment – jigger, winch, soft flow, jet dyeing machine, J-box, padding mangles, package dyeing machine and garment dyeing machine. RFT dyeing. Classification of dyes. Dyeing of cotton fabrics using direct, reactive, vat and Sulphur dyes. Dyeing of polyester (carrier, HTHP and thermosol) and cellulosic blends (one bath and two bath process). Fastness properties of dyes.

PRINTING**7 Hours**

Print paste - ingredients and their functions. Styles of printing- direct style, discharge style of printing cotton using pigments on reactive ground, resist style of printing cotton on reactive ground, Tie and dye, batik. After treatments of printed goods.

METHODS OF PRINTING**7 Hours**

Block, Stencil, Roller, Rotary, Flatbed, Transfer and Chest printing. Screen Making. Special prints–khadi, rubber, foam, glitter, leather, foil, flock, ikat and pearl. Latest developments in printing.

QUALITY ASSURANCE AND ECO –FRIENDLY WET PROCESSING 10 Hours

Need for Quality control areas of Quality control in wet processing (Water, PH, Temperature, MLR, Time). Computer color matching. Importance of eco –friendly wet processing, List of banned dyes and chemicals, German ban, Eco-Labels, Eco-Testing. Textile effluent treatment.

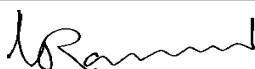
Theory: 45 Tutorial: 0 Practical: 0 Project: 0 Total: 45Hours

REFERENCES

1. V A Shenai Technology of Textile Processing- Vol. III, , 1975, Sevak Publications
2. V.A. Shenai, “Technology of Dyeing –Volume VI”, Sevak Publications, Bombay, 2000.
3. “Chemical Processing of Textiles-I” Nodal Centre for Upgradation of Textile Education (NCUTE), 2000.
4. JohnShore, “CellulosicsDyeing”, Society of Dyers and Colourists, Mumbai, 2005
5. Lesile W.C. Miles, “Textile printing”, Society of Dyers and Colorists, Mumbai, 2003
6. “Chemical technology in the pre-treatment Processes of textiles”, S.R. Karmakar, ISBN: 0-444 50060-1 Nov, 1999
7. Datye K.V. and Vaidya A. A., “Chemical Processing of Synthetic Fibers and Blends”, John Wiley and Sons, New York, 1984.
8. “Chemical Preparatory processing in Textiles” NCUTE Programmes series, march 13-14, 2000.
9. “Dyes and pigments”: New research, Arnold r. Lang Editor, Nova Science Publishers, Inc. New York January 8, 2013
10. “Eco-Friendly Textiles-The German Ban”, NITRA Publishing Ltd., 1996.
11. “Eco-Friendly Textiles Challenges to the Textile Industry”, Textile Committee. March 10 1995.

PRACTICAL COMPONENT CONTENT

1. Bleaching of cotton using hydrogen peroxide.
2. Dyeing of cotton with direct dyes on woven/knitted fabric.



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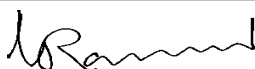
3. Dyeing of cotton with cold/hot brand reactive dyes on woven/knitted fabric.
4. Dyeing of cotton with vat dyes on woven/knitted fabric.
5. Dyeing of protein fibers with acid dyes.
6. Stripping and re-dyeing of cotton fabric.
7. Dyeing of polyester using carrier.
8. Direct & discharge style of printing on cotton fabrics.
9. Resist style printing on cotton.
10. Determination of color fastness of dyed fabrics using launderometer

Theory: 0 Tutorial: 0

Practical: 30

Project: 0

Total: 30 Hours



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U18FTI5202 TEXTILE AND APPAREL QUALITY EVALUATION**Course Outcomes**

L	T	P	J	C
3	0	2	0	4

After successful completion of this course, the students should be able to

CO1	Acquire knowledge in sampling techniques of fibers, yarns and fabrics and also in various method of measuring yarn number	K5
CO2	Apply knowledge in principles of working of fiber & yarn testing instruments	K3
CO3	Apply knowledge in principles of working of fabric testing instruments	K3
CO4	Correlate knowledge in evaluation of fabric handle properties	K4
CO5	Acquire knowledge on testing instruments used for accessories	K4
CO6	Analyze knowledge in the measurement of fastness properties of fabrics	K4

Pre Requisite:

U18FTI4204 Fabric Structure and Design

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

Cos	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S													
CO2		M												M
CO3		S												M
CO4	M	M												M
CO5	M		S				S							M
CO6			M				M							

Course Assessment methods

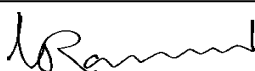
Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

Course Content**Sampling and Yarn Numbering System****6 Hours**

Definition – random, biased sampling. Terms used in sampling. Sampling techniques for fiber, yarn and fabric. Moisture regain and Moisture content. Standard conditions for testing samples. Yarn count – Definition. Yarn numbering systems: Direct system, indirect system and count conversion calculations.

Fiber and Yarn Testing**12 Hours**

Fiber: High Volume Instruments (HVI): length, strength, maturity, trash & color module analysis. Advanced Fiber Information System (AFIS): length, nep and trash modules. Determination of yarn count, yarn twist- single and folded yarns. Measurement of yarn hairiness - optical,



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singeing and hairiness tester- Causes for yarn hairiness. Classification of variation. Methods of measuring evenness –Blackboard, ASTM standards, Cutting and weighing methods. Electronic capacitance – evenness tester – Usterstandards. Yarn faults – classification – Classimat. Measurement of yarn strength – Single yarn strength tester –Tensorapid, Tensojet - lea strength tester. CSP& its significance.

Fabric Testing - Mechanical Properties

9 Hours

Fabric tensile strength tester– Raveled strip, Cut strip, Grab methods. Fabric tear strength tester – Elmendorf strength tester. Ballistic strength tester – Hydraulic bursting strength tester. Fabric abrasion resistance – Martindale abrasion tester. Fabric Pilling - I.C.I Pillbox tester. Crimp – Influence of crimp on fabric properties–Shirley crimp tester. Fabric thickness and GSM measurements.

Fabric Testing – Aesthetics and Comfort Properties

9 Hours

Fabric Drape – Drape meter. Fabric Stiffness – Shirley Stiffness tester, Fabric crease resistance and crease recovery measurements. Fabric Permeability- Fabric air permeability tester and water permeability tester. Fabric thermal resistance tester.

Apparel and Accessory Testing

9 Hours

Seam strength and seam slippage testing. Peel bond strength, Button strength, Zipper strength testing. Color fastness testing – Washing, Rubbing, Light, Perspiration fastness. Apparel dimensional stability – spirality, skewing and its measurement.

Theory: 45

Tutorial: 0

Practical: 0 Project: 0

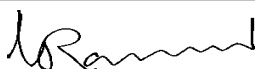
Total: 45 Hours

REFERENCES

1. Arindam Basu, “Textile Testing – Fiber, Yarn and Fabric”, The South India Textile Research Association, Coimbatore, 2001.
2. B.P. Saville, “Physical Testing of Textiles”, Wood head Publishing Limited, 1999.
3. Grover E G and Hamby D.S, “Hand Book of Textile Testing and Quality Control”, Wiley Eastern Pvt. Ltd., New Delhi, 2000.
4. Sundaram V, “Handbook of Textile Testing”, CTRL Publication, Bombay, 2003.
5. Booth, J.E., “Principles of Textile Testing”, CBS Publishers and Distributors, 2002.
6. BSI, “BSI Hand books”, British Standard Institution, Manchester, 2007
7. BIS, “BIS Hand Books”, Bureau of Indian standards, Delhi, 2007.

PRACTICAL COMPONENT CONTENT

1. Determination of yarn count and lea strength
2. Determination of single / ply yarn twist
3. Determination of fabric abrasion resistance & fabric pilling
4. Determination of fabric tensile & tear strength
5. Determination of color fastness to rubbing - crock meter & shrinkage of woven/knitted fabrics
6. Determination of fabric stiffness and crease recovery angle



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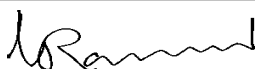
7. Determination of fabric bursting strength and fabric drape.
8. Determination of seam strength
9. Determination of button pull strength
10. Determination of peel bond strength of fusible interlinings
11. Determination of wick ability of fabrics
12. Determination of spirality and course length of knitted fabrics

Theory: 0 Tutorial: 0

Practical: 30

Project: 0

Total: 30 Hours



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U18FTT5003 KNITTING TECHNOLOGY**Course Outcomes**

L	T	P	J	C
3	0	0	0	3

After successful completion of this course, the students should be able to

CO1	Recognize the weft knitted fabric production processes	K2
CO2	Outline the structure and properties of various weft knitted fabrics	K3
CO3	Acquire know ledge on the structure and properties of various advanced weft knitted fabrics	K3
CO4	Recognize the structure and properties and in warp knitting	K3
CO5	Recognize the Latest developments in warp knitting	K3
CO6	Acquire knowledge on the application of knitted structures for Technical Textiles	K3

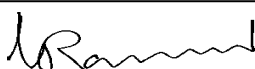
Pre Requisite:

U18FTT3001 Yarn Technology

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS01
CO1	S	M											M	M
CO2	S	M											M	M
CO3	S	M	W										M	M
CO4	S	M	W										M	M
CO5	S	M											M	M
CO6	S	M												

Course Assessment methods:

Direct	Indirect
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1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	2.Course Exit Survey
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PRINCIPLE OF WEFT KNITTING:**9 Hours**

Comparison of Weaving and Knitting and nonwoven - Terms and definitions in weft knitting –Knitting elements-Needle and its types, sinker, cam Knitting action of latch, bearded and compound needles. –Working principle and passage of Yarn in circular and Flat knitting machine -Classifications of knitting machines.-Comparison of Plain, circular rib, and interlock fabrics and machines. - Yarn quality for knitting.-selection of weft knitted fabrics

WEFT KNIT STRUCTURES:**9 Hours**

Classification of weft knit structures,-Symbolic and diagrammatic representation of weft knit structures.- Comparison of single jersey, rib and interlock and purl structures-comparison knit, tuck, float Stitches-unconventional stitches –Single jersey derivatives, accordion, check and stripe effect.- Rib derivatives derby rib and Swiss rib, royal rib, polka rib- Rib gated structures Milano Rib, Double pique and Pique poplin.- Knitted fabric Geometry Kc, Kw, Ks, R-knitted fabric defects-quality control

ADVANCED WEFT KNIT STRUCTURES:**9 Hours**

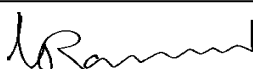
Eight lockstructure, Interlock gated structures Single pique, Ponte-di-Roma and Ottoman rib. - Derivatives of purl structure cross purl and basket purl - Blister fabrics – Introduction to Jacquard structures- socks knitting- flat bed knitting- weft knitting calculations for GSM and production- Latest developments in Weft knitting machines and fabrics, -Principles of seamless garment manufacture in circular and flat knitting- Application of weft knitted structures in technical textiles

WARP KNITTING BASICS :**9 Hours**

Comparison of warp and weft knitting-basic warp knitting elements, knitting cycle-tricot, Rachel machines Comparison of tricot and Rachel Warp knitting –Basic stitches-pillar, blindlap, tricot, inlay, satin and atlas stitches.

WARP KNIT STRUCTURES**9 Hours**

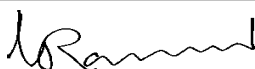
Fulltricot, lock knit and loop raised fabrics. Basic Raschel Warp Knit structures-power nets, curtains and laces. – Latest developments in warp knitting machines. Warp knitting calculations for GSM, production- Application of warp knitted structures in technical textiles

Theory: 45**Tutorial: 0****Practical: 0****Project: 0****Total: 45 Hours**


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REFERENCES

1. David Spencer., “Knitting Technology”, Pergamon Press, Oxford 2005
ISBN(13): 9781855733336
2. Anbumani N., “Knitting – Fundamentals, Machines, Structures and Developments”, New Age International Publishers, 2010. **ISBN(13):** 978-81-224-1954-2
3. Ajgaonkar DB, “Principles of Knitting”, Universal Publishing Corporation, Mumbai, 1998,
ISBN: 81-85027-34-X.
4. Chandrasekhar Iyer, Bernd Mammel and Wolfgang Schach., “Circular knitting”, Meisenbach GmbH, Bamberg, 1995, **ISBN:** 3-87525-066-4.



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U18FTP5504 APPAREL PRODUCTION LABORATORY**Course Outcomes**

After successful completion of this course, the students should be able to

L	T	P	J	C
0	0	2	0	1

CO1	Develop apparel designs and fashion illustration for ladies & men's wear	K6
CO2	Prepare basic blocks for ladies wear	K3
CO3	Develop patterns as per the required styles for ladies and men's garments	K4
CO4	Develop patterns as per the required styles for men's garments and practice grading for different sizes	K4
CO5	Practice construction of apparel, outline construction flow process for various ladies & men's garments	K4
CO6	Estimate fabric consumption by marker making and costing of apparels	K4

Pre Requisite

U18FTI3204 Garment Components Fabrication

U18FTI 4203 Apparel Design Development

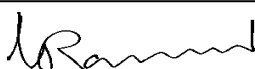
CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	P O 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO1	S	M											S	W
CO2	S	S	M										S	
CO3		S	S	S									S	
CO4		S	S	S									S	
CO5			M	S					S	W	M	M	S	
CO6			M	S					S	W	M	M	M	

Course Assessment methods

Direct	Indirect
1. Model Exams 2. Lab Exercises 3. End semester Exams	1. Course Exit Survey

LIST OF EXPERIMENTS:

1. Development of basic block patterns–top, skirt and bifurcated garments and grading of any one (men's or ladies garment)
2. Designing and Developing Pattern for Brassier and Panties
3. Construction of Brassier and Panties
4. Designing and Developing Pattern for Choli

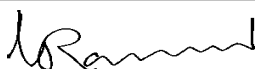


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5. Construction of Choli
6. Designing and Developing Pattern for Men's Formal Shirt
7. Construction of Men's Formal Shirt
8. Designing and Developing Pattern for Men's Formal Trousers
9. Construction of Men's Formal Trousers
10. Designing and Developing Pattern for Knitted Basic T-shirt
11. Construction of Knitted BasicT-shirt
12. Marker Planning for any one garment

Experiments beyond the syllabus should be conducted

Total: 30 Hours



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U18INI5600**ENGINEERING
CLINIC – V**

L	T	P	J	C
0	0	4	2	3

Course objectives

- To help the students look into the functioning of simple to complex devices and systems
- To enable the students to design and build simple systems on their own
- To help experiment with innovative ideas in design and team work
- To create an engaging and challenging environment in the engineering lab

Course Outcomes

After successful completion of this course, the students should be able to:

CO1: Identify a practical problems and find a solution

CO2: Understand the project management techniques

CO3: Demonstrate their technical report writing and presentation skills

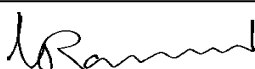
Pre-requisite:

1. U18INI4600 Engineering IV

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	S	S	S	S	S	M	W		S			S		
CO2											S			
CO3										S				

Course Assessment methods:

Direct	Indirect
1. Project reviews 50%	1. Course Exit Survey
2. Workbook report 10%	
3. Demonstration& Viva-voce 40%	



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Content:

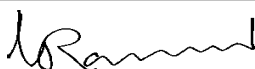
The course will offer the students with an opportunity to gain a basic understanding of computer controlled electronic devices and apply the concepts to design and build simple to complex devices. As a practical project based embedded course, the students will be taught the concepts using a variety of reference material available in the public domain. While the course will start with formal instruction on hardware, programming and applications, the major portion of the course will provide the students with ample opportunity to be innovative in designing and building a range of products from toys to robots and flying machines.

In the V semester, students will focus primarily on Reverse engineering project to improve performance of a product and Design and developing a prototype.

GUIDELINES:

1. Practical based learning carrying credits.
2. Multi-disciplinary/ Multi-focus group of 5-6 students.
3. Groups can select to work on a specific tasks, or projects related to real world problems.
4. Each group has a faculty coordinator/Instructor who will guide/evaluate the overall group as well as individual students.
5. The students have to display their model in the 'Engineering Clinics Expo' at the end of semester.
6. The progress of the course is evaluated based on reviews and final demonstration of prototype.

Total Hours: 90



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U18VEP5505**SOCIAL VALUES**
(Mandatory)

L	T	P	J	C
0	0	2	0	0

Course Outcomes

After successful completion of this course, the students should be able to

- CO 1:** Understand the transformation from self to society
CO 2: Acquire knowledge about disparity among Human Beings
CO 3: Realize the new ethics in creating a more sustainable Society
CO 4: Develop skills to manage challenges in social issues
CO 5: Acquire the skills for Management of Social work & Holistic Society
CO 6: Validate the social liabilities at dissimilar situations

Pre-requisites :

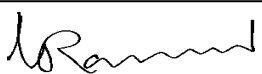
1. U18VEP1501 / PERSONAL VALUES
2. U18VEP2502 / INTERPERSONAL VALUES
3. U18VEP3503 / FAMILY VALUES
4. U18VEP4504 / PROFESSIONAL VALUES

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						S						
CO2							S					
CO3								M				
CO4											S	
CO5												S
CO6									M			

Course Assessment methods

Direct
1. Group Activity / Individual performance and assignment 2. Assessment on Value work sheet / Test
Indirect
1. Mini project on values / Goodwill Recognition

Values through Practical activities:


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1. Self and Society:Relation between self and society – Different forms of society - Elements of Social structures – Realization of Duties and Responsibilities of Individual in the Society

2. Social Values: Tolerance – Responsibility – Sacrifice – Sympathy - Service – peace-nonviolence - right conduct- Unity – forgive – dedication – Honest

3. Social issues :Disparity among Human beings- Poverty-Sanitation -corruption- un employment-superstition – religious intolerance & castes – terrorism.

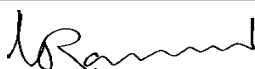
4. Emerging Ethics for Sustainable Society: Unison of Men in Society - Positive Social Ethics - Cause and Effect - Ensuring an Equitable Society- Effect of Social Media in society - development of Education and Science in the Society

5. Social Welfare:Social welfare Organization - Programme by Government and NGO's - Benefits of Social Service - Balancing the Family and Social Life – Development of Holistic Society

Workshop mode

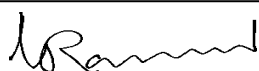
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3. INDIAN SOCIETY AND SOCIAL CHANGE - University of Calicut
www.universityofcalicut.info/SDE/BA_sociology_indian_society.pdf
4. CULTURE, SOCIETY AND THE MEDIA - E-class
www.eclass.uoa.gr/.../MEDIA164/.../%5BTony_Bennett,_James_Curran,_Michael_G
5. SOCIAL WELFARE ADMINISTRATION - IGNOU
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SEMESTER VI



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U18FTT6001 APPAREL PRODUCTION PLANNING AND CONTROL

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Explain the basic techniques of production planning & control in garment industry	K3
CO2	Choose production system for apparel industry based on style and quantity of merchandise	K5
CO3	Prepare and analyze the flow process grids, control forms and scheduling charts for production control in apparel industry	K4
CO4	Decide the suitable cut production analysis for various garment quantities	K4
CO5	Determine the capacity planning and line balancing techniques to achieve balanced production	K3
CO6	Update modern tools and methods of production planning and control	K2

Pre Requisite

U18FTT4002 Apparel Machinery and Equipment

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S								M				S	
CO2		S	M						M		S		M	
CO3		S		S	S				M	S	M		S	
CO4		S		S	S				M				S	
CO5		S			S				M	M	S		S	
CO6	S	S		S	M				M	M	S		S	

Course Assessment methods

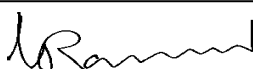
Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

Course Content**PRODUCTION PLANNING AND CONTROL****9 Hours**

Definition, Objectives and functions of production planning and production control, Functions of PPC in garment industry. Pre-production functions, Importance of Preproduction function, Product development - steps from prototype to production sample. Lead Time, Product data management, Order quantity to shipment quantity.

PLANNING IN CUTTING**9 Hours**

Cut order planning – types of spreads, spreading methods, marker utilization, economic cut



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quantities. Control forms in cutting department- cutting order, bundle ticket, bundle control sheet.

APPAREL PRODUCTION SYSTEMS

3 Hours

Section Production systems –whole garment production system, Progressive bundle system, Unit production system, Multiple flow system, modular manufacturing systems–their advantages and disadvantages. Guide lines for choosing suitable production system.

FLOWPROCESSGRIDSANDCHARTS

6 Hours

Operation Break Down and Production Sequence, Identification Of Bottle Necks And Critical Area, Operation Wise Machinery Allocation, Usage Of Special Attachments And Tools For Operation Simplifications, Production Grid And Flow Chart.

PRINCIPLES OF SCHEDULING

4 Hours

Scheduling charts – GANTT chart, Scheduling techniques Network representation–CPM and PERT Time & Action calendar

LINEBALANCING

5 Hours

Determination and allocation of manpower and machines for balanced production in existing plant for a given target, application of line balancing techniques– balance control.

PLANT LOADING AND CAPACITY PLANNING

5 Hours

Production line loading planning, Factory Capacity planning, Determination of machine requirements for a new factory -calculation of labor requirements, Linear programming.

PRODUCTION CONTROL

4 Hours

Production control forms, Modern Methods in Cut Piece Distribution and Tracking in different Manufacturing Systems, Production planning softwares.

Theory: 45

Tutorial: 0

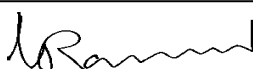
Practical: 0

Project: 0

Total: 45 Hours

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1. Garg R.K., and Sharma V., “Production Planning and Control Management”, Dhanpat Rai Publishing, 2003.
2. Jacob Solinger, “Apparel Production Handbook”, Reinhold Publications, 1998.
3. Telsang (Martand) “Industrial Engineering and Production Management” S. Chand & Company Limited, 2008
4. Rajesh Bheda “Managing Productivity of Apparel Industry” CBI publishers and distributors, New Delhi 2002.
5. David J Tyler, “Material Management in Clothing Production”, Prentice Hall, New Jersey, 1991.
6. Churter, A.J., “Introduction to Clothing Production Management”, Oseney Mead, 2001
7. Carr Harold, Latham Barbara, “The Technology of Clothing Manufacture”, Om Book Service, 2004.



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U18FTT6002 APPAREL MERCHANDISING AND COST MANAGEMENT

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Acquire knowledge in basic principles of merchandising	K2
CO2	Acquire knowledge in sourcing and documentation	K2
CO3	Describe the factors that determine the cost of apparel products	K2
CO4	Calculate the CMT cost for different types of garments	K4
CO5	Evaluate the cost of apparel products based on various specifications of garments	K5
CO6	Acquire knowledge on various pricing techniques, budgeting and cost volume profit analysis	K2

Pre Requisite : NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PSOs	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1		S								S				
CO2		S		S										
CO3	S	S		S							S	S		
CO4		S									S		S	
CO5		S									S	S	S	
CO6		S							S		S			

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. Tutorial 5. End Semester Exam	1.Course Exit Survey

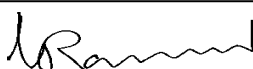
MERCHANDISING
9 Hours

Definition of merchandising. Classification of exporters- Manufacturer exporter, Merchant exporter, Job worker (CM/CMT),

Functions of merchandising division - Role and responsibilities of a merchandiser-different types of buyers. Communications with the buyers -awareness of current market trends– product development- line planning and line presentation.

SOURCING AND DOCUMENTATION
9 Hours

Need for sourcing-sourcing materials-manufacturing resources planning-principles of MRP. Sourcing strategies- Overseas sourcing. Supply chain and demand chain analysis- Materials management for quick response.



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Order confirmation, various types of export documents, Pre-shipment, Post -shipment documentation, Terms of sale, payment, shipment etc.

COST ACCOUNTING:

6 Hours

Objectives, uses of cost accounting. Elements of cost. Direct material, Directlabour, Factory overheads. Cost- Fixed, variable, semi variable. Estimating and costing-

RAW MATERIAL AND CMT COST:

9 Hours

Factors that determine cost of garments- material cost- cost of yarn, cost of fabric production, cost of processing. Width and design of fabric affecting cost. Accessories and their costing. Packing and labeling cost

Cost of components –cutting cost – making and trim cost (CMT cost) – CMT cost for different types of garments. Shipment cost.

GARMENT PRICING AND CVP ANALYSIS

12 Hours

Determining pricing of apparel products: sample costing-marginal cost, cost plus pricing methods; Full cost pricing, conversion cost pricing, differential cost pricing ,absorption and variable cost pricing ,direct cost pricing. Cost calculation of apparel products- woven/knits.

Ratio analysis, price / volume analysis. Break even analysis. Capital budgeting- payback period, rate of return, net present value – limitations.

Theory: 45

Tutorial: 0

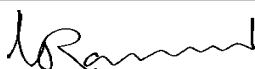
Practical: 0

Project: 0

Total: 45 Hours

REFERENCES

1. Philip Kotler, Kelvin Lane Keller, Abraham Koshy and MithileshwarJha, "MarketingManagementaSouthAsianPerspective",PearsonEducationIndia, 2006.
2. John Donnellan"MerchandiseBuyingand Management", FarichildPublications,inc.,NewYork,2002.
3. M.Y.KhanandP.K.Jain"CostAccounting",HillpublishingLtd.,New Delhi, 2007.
4. Ruth E.GlockandGraceI. Kunz,"ApparelManufacturingSewnProduct Analysis",DorlingKindersley(India)Pvt.Ltd.,2005.
5. Chakraborty S K, "Cost Accounting and Financial Management", New age International, 2004.
6. RuthEGlockandGraceIKunz,"ApparelManufacturing",PrenticeHall,NewJersey,FourthE dition,2005.



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**U18FTT6003 INDUSTRIAL ENGINEERING IN APPAREL
INDUSTRY**
Course Outcomes

L	T	P	J	C
3	0	0	0	3

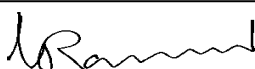
After successful completion of this course, the students should be able to

CO1	Acquire broad knowledge of the various industrial engineering methods and tools associated with manufacturing systems and human factors	K3
CO2	Demonstrate modern industrial engineering methods and scientific solutions to apparel manufacturing towards economic, environmental, and societal context	K4
CO3	Perform as industry leaders in the global marketplace, capable of successfully planning, controlling, and implementing large-scale projects	K4
CO4	Understand and apply the principles of science, technology, engineering, and math involving industry-relevant problems	K4
CO5	Acquire skills to investigate, experiment and solve problem in context with productivity improvement and material handling	K5
CO6	Acquire skills to implement IE techniques in sewing floor of any apparel manufacturing firm	K4

Pre Requisite :

U18FTI3204 Garment components fabrication

CO/PO Mapping														
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PS O 1	PS O 2
	P O 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P O 10	PO1 1	PO1 2		
CO1	S												S	
CO2					S	S						M	M	
CO3				M									M	
CO4	M			S									M	
CO5		M		S									M	



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CO6				S	S				M				M	
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Course Assessment methods:

Direct	Indirect
Internal tests(I, II,), Assignment, End Semester Exam	1. Course End Survey

INTRODUCTION:**9 Hours**

Scope of industrial engineering in apparel Industry, role of industrial engineers.

Productivity: Definition-Productivity, Productivity measures .Causes for low productivity in apparel industry and measures for improvement.

Work Study-Definition,Purpose, Basic procedure and techniques of work-study.

WORK ENVIRONMENT**9Hours**

Lighting, Ventilation, Climatic condition on productivity. Temperature control, humidity control, noise controlmeasures.Safetyandergonomicsonworkstationandworkenvironment

Material Handling – Objectives, Classification and characteristics of material handling equipments, Specialized material handling equipments.

METHOD STUDY:**9 Hours**

Definition, Objectives, Procedure, Process charts and symbols. Various charts–Charts indicating process sequence: Outline process chart, flow process chart (mantype, material type and equipment type); Charts using time scale–multiple activity chart. Diagrams indicating movement –flow diagram, string diagram, travel chart

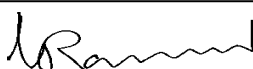
MOTION STUDY: Principle of motion economy, Two handed process chart, micromotion analysis–therbligs, SIMO chart.

WORK MEASUREMENT:**9 Hours**

Definition, purpose, procedure, equipments,techniques.Time study- Definition, basics of time study- equipments. Time study forms, Stop watch procedure. Predetermined motion time standards (PMTS).Time Study rating, calculation of standard time, Performancerating–relaxation and other allowances. Calculation of SAM for different garments, GSD.

WORK STUDY APPLICATION:**9 Hours**

Application of work study techniques in cutting, stitching and packingin garment industry.



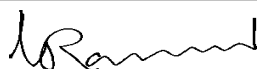
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Workaids in sewing, Line balancing, Capacity planning, scientific method of training, Value engineering, LEAN manufacturing.

Theory: 45 Tutorial: 0 Practical: 0 Project: 0 Total: 45 Hours

REFERENCES

1. Johnson Maurice "Introduction of Work Study", International Labour Organization, Geneva, 2005.
2. V. Ramesh Babu "Industrial Engineering in Apparel Production" Woodhead publishing India PVT Ltd, 2012
3. Rajesh Bheda, "Managing Productivity in Apparel Industry" CBS Publishers & Distributors, ISBN 8123909217, 9788123909219, 2008
4. Chuter A. J., "Introduction to Clothing Production Management", Black well Science, U. S. A., 1995
5. Dr. Prabir Jana and Dr. Manoj Tiwari. Industrial Engineering in Apparel Manufacturing: Practitioner's Handbook Apparel resources Pvt Ltd. ISBN-10: 8193247205
6. J. K. Akhil, Apparel Engineering: Industrial Engineering Methods for Apparel Industry Createspace Independent Pub; 01 edition (20 March 2016) ISBN-10: 1515127125
7. Prasanta Sarkar, Industrial Engineering Guide to Job Interview Preparation, Online Clothing Study; 1 edition (2014) ISBN-10: 9383303751
8. <https://nptel.ac.in/courses/112107142>
9. www.onlineclothingstudy.com



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U18 FTP6504 APPAREL CAD LABORATORY

L	T	P	J	C
0	0	2	0	1

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Develop Computer aided pattern drafting for different apparels	K3
CO2	Develop the skill of grading various apparel patterns using CAD	K3
CO3	Create and manipulate efficient marker plans	K4
CO4	Construct specification sheets for garments as per requirements	K3
CO5	Estimate the fabric consumption	K3
CO6	Develop cut order plan	K4

Pre Requisite

U18FTI 4203 Apparel Design and Development

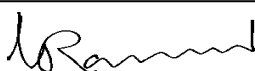
CO/PO Mapping														
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
CO	Programme Outcomes(POs)												PSO1	PSO2
	PO 1	PO 2	PO 3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12		
CO 1		S			S				S	M			S	S
CO 2		S			S				S	M			S	S
CO 3		S			S				S	M			M	M
CO 4		M			S								M	M
CO 5					M								M	M
CO 6					M				S	M			M	M

Course Assessment methods

Direct	Indirect
1. Lab Model Exams 2. Lab Exercises 3. End semester Exams	1. Course Exit Survey

LIST OF EXPERIMENTS:

1. Develop pattern, grading for children's wear– Baby frock using a one way fabric of 38”and 42”width.
2. Develop pattern, grading for children's wear–Rompers using a two-way fabric of 38”and 42”width.
3. Develop a specification sheet for a children's wear–Rompers

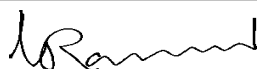


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4. Develop pattern, grading and marker plan for a Ladies top with fabric of 44" and 52" width. Calculate the fabric consumption. Develop a specification sheet for the Ladies top.
5. Develop pattern and marker plan for a Men's Basic T shirt of 48" fabric width. Calculate the fabric consumption. Develop a specification sheet for a Men's Basic Tshirt. Develop a cut order plan
6. Develop pattern and grading and marker plan for Men's Formal Trouser using fabric of 60" and 72" width. Calculate the fabric consumption. Develop a specification sheet for Men's Formal Trouser.
7. Develop pattern and grading and marker plan for Ladies Full Gown using fabric of 48" width. Calculate the fabric consumption. Develop a specification sheet for Ladies Full Gown.
8. Develop pattern, grading and marker plan for a Ladies Skirt using plaid fabric of 38" and 60" width. Calculate the fabric consumption. Develop a specification sheet for Ladies Skirt. Develop a cut order plan
9. Develop pattern, grading and marker plan for a Men's Full arm shirt using fabric of 60" and 72" width. Calculate the fabric consumption. Develop a specification sheet for Men's Full arm shirt.
10. Develop pattern, grading and marker plan for Salwar Kameez using fabric of 60" and 72" width. Calculate the fabric consumption.
11. Develop pattern and grading for a blazer using fabric of 60" and 72" width. Calculate the fabric consumption.
12. Develop pattern, grading and marker plan for a Men's vest and brief using fabric of 38" and 42" width. Calculate the marker efficiency and fabric consumption. Develop a specification sheet for vest and brief. Develop a cut order plan.

Experiments beyond the syllabus should be conducted

Total: 30 Hours



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U18FTP6505

PORTFOLIO PRESENTATION I

Course Outcomes

L	T	P	J	C
0	0	2	0	1

CO1	Acquire knowledge on conducting design research through market study.	K5
CO2	Understand brand identity and develop a brand note and a concept note.	K6
CO3	Create client profiles who can be potential customers to the designs created.	K6
CO4	Select a theme and outline a mind map relevant to the theme.	K5
CO5	Understand the process of fashion forecasting and its importance.	K5
CO6	Interpret and relate fashion forecasts to choose colours and designs based on the theme to meet the needs of the export market.	K5

Pre-requisite:

U18FTI4203 Apparel Design and Development

CO/PO Mapping														
(S/M/W indicates strength of correlation); S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1		S		S									M	
CO2			S		S	S	M	S				S	S	S
CO3					S					S			M	
CO4		S				S	S	S			S		S	S
CO5											M		S	
CO6		S	S							S		S	S	S

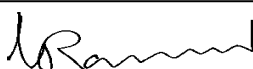
Course Assessment methods:

Direct	Indirect
1. Model Exams 2. Lab Exercises 3. End semester Exams/Final presentation	1. Course End Survey

GUIDELINES:

The following have to be prepared:

1. Design Research and Mindmap
2. Conceptualization
3. Client profile
4. Theme board
5. Color board
6. Forecast board
7. Fashion Illustration presentation board Men's – 5 nos
8. Fashion Illustration presentation board women's – 5 nos
9. Sourcing board – Fabrics
10. Sourcing board - Trims

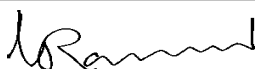


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Total: 30 Hours

References:

1. Drake/ Spooner/Greenwald —"Retail fashion Promotion and Advertising"
2. Gini Stephens Frings — "Fashion- from concept to consumer" Pearson Education
3. Jarnow, J and KG Dickenson, —"Inside the Fashion Business" Prentice Hall, 1997
4. Jerligan Easterling —"Fashion Merchandising And Marketing" Pearson Education
5. Polly Guerin — "Creative fashion Presentations" Fairchild Publications
6. Be stylish with Bernia Quleshi Bernia Gureshi
7. Comdex Fashion Design Vol -1 Fashion Concepts Vikas Gupta
8. Cooklins garment tech note for fashion design Steven 978-81-265-3537-8
9. Costumes and textiles of Awadh Sushana Swarup
10. Fashion designing Ritubal 817573776
11. Comdex Fashion Design Vol -2 Esembles for your body type Vikas Gupta



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U18VEP6506**NATIONAL VALUES**
(Mandatory)

L	T	P	J	C
0	0	2	0	0

Course Outcomes

After successful completion of this course, the students should be able to

CO 1:Acquire knowledge on the Essence of Indian Knowledge Tradition

CO 2:Know the great Indian personalities and follow their trail

CO 3: Understand the specialty of democracy

CO 4: Disseminate our Nation and its values to propagate peace

CO 5: Contribute with their energy and effort for a prosperous India

CO 6: Propagate the youth and the contribution for development of our Nation

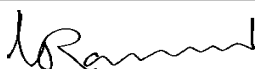
Pre-requisites :

1. U18VEP1501 / PERSONAL VALUES
2. U18VEP2502 / INTERPERSONAL VALUES
3. U18VEP3503 / FAMILY VALUES
4. U18VEP4504 / PROFESSIONAL VALUES
5. U18VEP5505 / SOCIAL VALUES

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						S						
CO2									M			
CO3							M					
CO4								S				
CO5											S	
CO6												M

Course Assessment methods

Direct
1.Group Activity / Individual performance and assignment 2.Assessment on Value work sheet / Test
Indirect
1. Mini project on values / Goodwill Recognition



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Values through Practical activities:

1. Essence of Indian Knowledge Tradition:

Basic structure of Indian Knowledge System - Modern Science and Indian Knowledge System - Yoga and Holistic Health care - Case studies - Philosophical Tradition - Indian Linguistic Tradition - Indian Artistic Tradition.

2. Great Indian Leaders : Ancient rulers - Freedom fighters - Social reformers - Religious and Spiritual leaders - Noble laureates - Scientists – Statesman.

3. Largest Democracy : Socialist - Secular - Democratic and Republic – special features of Indian constitution – Three pillar of Indian democracy - Fundamental rights – Duties of a citizen – centre state relationship.

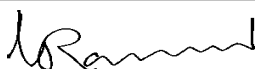
4. India's Contribution to World peace : Nonaligned Nation – Principle of PanchaSheela – Mutual respect, non-aggression, non-interference, Equality and cooperation – Role of India in UNO -Yoga India's gift to the world.

5. Emerging India : World's largest young work force - Stable Economic development - Labor market & Achievement in space technology – Value based Social structure. Emerging economic superpower.

Workshop mode

REFERENCES

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3. LEARNING TO DO: VALUES FOR LEARNING AND WORKING TOGETHER - UNESCO
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4. INDIA AFTER GANDHI.pdf - RamachandraGuha - University of Warwick
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5. INDIA'S CONTRIBUTION TO THE REST OF THE WORLD - YouSigma
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6. INDIA AS AN EMERGING POWER - International Studies Association
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SEMESTER VII



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U18FTT7001

APPAREL BRAND MANAGEMENT

L	T	P	J	C
3	0	0	0	3

Course Outcomes**After successful completion of this course, the students should be able to**

CO1	Acquire knowledge on branding strategy and positioning	K2
CO2	Apply the brand building and extension strategies	K3
CO3	Analyze the brand management and global branding techniques	K4
CO4	Acquire knowledge on Advertising types and advertisement business	K3
CO5	Demonstrate ability to create advertisement message, select media, and work out budget.	K5
CO6	Analyze the process of budgeting in advertisement business	K5

Pre-requisites: NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak															
COs	Programme Outcomes(POs)														
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PO1 2	PS O 1	PSO 2	
CO1		M	M	M	S								M		
CO2		M	M	M	S		M		S	M		M	M	M	
CO3		M	M	M	S	S	M		S	M	M	M	M	M	
CO4		M	M	M	S	S	M	M	M	M			M	M	
CO5		M	M	M	S	S	M	M	S	M		M	M	M	
CO4		M	M	M	M		M		M	M	M		M	M	

Course Assessment methods

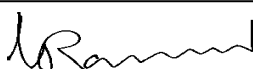
Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	2. Course Exit Survey

Course Content**BASICS OF BRANDING****9 Hours**

Concept, image, identity, loyalty. Brand name – types. Branding strategy - Brand positioning - competitive positioning, product positioning. Brand equity. Intellectual property rights – Trademark and brand registration.

BRAND BUILDING**9 Hours**

Consumer branding, technology branding, corporate branding, retail branding. Brand extension: Concept, evaluation of opportunities, factors influencing extension, extension guidelines.

GLOBAL BRANDING & RETAIL ANALYTICS**9 Hours**


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Rationale, advantages / disadvantages. International branding strategy - planning system, leadership, cross-country relationship. Brand Management Systems: Role of Product managers / brand managers. Trends in brand management - brand cult. Brand alliances – co branding, licensing. Retail analytics- Need and benefits.

ADVERTISING

9 Hours

Definition, advertising objectives, benefits, economic aspects and ethics in advertising. Advertising and marketing mix. Advertising Appeal: Message – reach, frequency, impact and effectiveness. Media Overview: Types of media, media selection, media plan, media cost and availability. Matching media and market. Media strategy - media mix, media scheduling. Comparative evaluation.

ADVERTISING BUSINESS

9 Hours

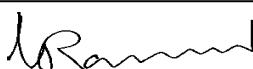
Organization, advertising manager, advertising agency, advertising plan, basic principles, agency compensation. Public relations. Advertising Budget: Allocation of budget for various components of advertising. Methods of determining budget for advertisement. Administering the advertisement budget

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Harsh.V.Verma, “Brand Management- Text and Cases”, Excel Books, New Delhi, 2005
2. Moorthi Y L R, “Brand Management”, Vikas Publications House Pvt. Ltd., Mumbai, 2004.
3. Kevin Lane Keller, “Strategic Brand Management”, Prentice Hall, 2nd Edition, 2006
4. Sengupta S, “Brand Positioning”, Tata McGraw Hill, New Delhi, 2006.
5. K.S.Chandrasekhar, “Product Management - Text and Cases”, Himalaya Publishing House, 1st Edition, 2002.
6. S.A.Chunnawala, “Product Management”, Himalaya Publishing Home, First Edition, 1998.



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U18FTT7002

APPAREL RETAIL MANAGEMENT

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Gain knowledge on the fundamentals of retailing	K2
CO2	Relate the aspects of customer behavior and retailing	K4
CO3	Acquire Knowledge on management of merchandise	K3
CO4	Understand the importance of effective location for retailing	K2
CO5	Understand the importance of atmospherics and space management of retail outlets	K2
CO6	Develop skills in retail pricing and strategies in promotional activities	K2

Pre Requisite:

U18FTI4203 Apparel Design and Development

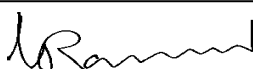
CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PSO1	PSO2
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		
CO1	W					M	M						M	
CO2	W	W							M	M	M	M	S	
CO3	W	M	M						M	M	M	M	S	S
CO4	W	M	S			M	M		M	M	M	M	S	S
CO5	W	M	S			M	M		M	M	M	M	S	S
CO6	W	M	S			M	M		M	M	M	M	S	S

Course Assessment methods:

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

Course Content**RETAILING AND RETAILING ORGANIZATION****9 Hours**

Definition, characteristics and functions of retailing, retailers, retailing channels, retail strategy. Structure of retail organization, retail units, merchandise mix, customer interaction, organized retailing, retail formats, geographical markets, retailing in rural India, vertical marketing system,



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challenges in retail business.

RETAIL CUSTOMER BEHAVIOUR

4 Hours

Consumer behaviour, factors affecting consumer decision making, consumer decision process, influence of situational variables on shopping behaviour, customer profile and analysis.

RETAIL MARKET SEGMENTATION AND TARGET MARKETING

5 Hours

Segmentation- definition and benefits: Segmenting, targeting and positioning. Criteria for segmentation, types of markets, dimensions for segmentation, types of segmentation. Market targeting, customer profile, survey of buyers intentions.

MERCHANDISE MANAGEMENT

7 Hours

Product management, brand management and retailing, merchandise management, model stock plan, constraining factors, types of suppliers and selection criteria, category management, merchandise management planning in retail segments. OTB Planning, sample plan.

RETAIL LOCATION AND SPACE MANAGEMENT

9 Hours

Location decision - importance, levels and determining factors. Types of location, types of consumer goods and location decision. Site selection analysis.

Atmospherics, store space management, walls as retail selling tools, colourplanning, physical materials in store designing, atmospherics in the context of internet retailing.

RETAIL PRICING & PROMOTION STRATEGY:

11 Hours

Influences on retail pricing strategy, development in retail prices, retail pricing objectives, retail pricing approaches and strategies, consumer responsiveness to prices, role of price elasticity and sensitivity. Profitability.

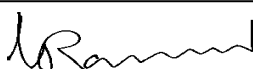
Promotion mix selection, advertising, media selection, sales promotion, personal selling and publicity.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. MikeEasey, "FashionMarketing", BlackwellScientificPublications, 2002
2. Gibson G. Vedamani, "Retail Management Functional Principles andPractices", JaicoPublishingHouse, SecondEdition, 2002
3. NairSuja.R, "RetailManagement", HimalayaPublishingHouse, 2008.
4. BajajChetanSrivatsaTuli, "RetailManagement", OxfordUniversityPress, 2008.
5. FlemingPeter, "AGuidetoRetailManagement": Adviceonretailoperation, customerserviceandsalesteam, JaicoPublishingHouse, Mumbai, 2007.
6. Gopal, "RetailManagement: AnIntroduction", ICFAIUniversitypress, 2006.



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U18FTP7503 PORTFOLIO PRESENTATION II

L	T	P	J	C
0	0	2	0	1

Course Outcomes

CO1	Collection of fabric swatches and understand their properties and use.	K3
CO2	Collection of garment trims & accessories and possible embellishments that can be adapted into the garment.	K3
CO3	Creation of a pattern (doodle) board relevant to the concept.	K3
CO4	Develop sketches of men's wear and women's wear and present the same as a fashion design board.	K6
CO5	Manufacture prototype of the garment and develop documents (Spec sheets) to enable effective communication in the apparel industry.	K6
CO6	Estimation of the garment cost based on the sample developed.	K5

Pre-requisite:

U18FTP6505 Portfolio Presentation I

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1		S		S									M	
CO2			S		S	S	M	S				S	S	S
CO3					S					S			M	
CO4		S				S	S	S			S		S	S
CO5											M		S	
CO6		S	S							S		S	S	S

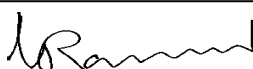
Course Assessment methods:

Direct	Indirect
1. Model Exams 2. Lab Exercises 3. End semester Exams/Final Presentation	1. Course End Survey

GUIDELINES:

The following have to be prepared:

1. Spec sheet (Tech pack)
2. Pattern (doodle) development board
3. Production process
4. Product development - One men's wear,
5. Product development - one women's wear
6. Costing sheet
7. Photo shoot
8. Product presentation

Total: 30 Hours


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U18FTP7701 PROJECT PHASE I

L	T	P	J	C
0	0	0	6	3

Course Outcomes

After successful completion of this course, the students should be able to

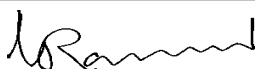
CO1	Ability to survey literature relevant to the topic under consideration
CO2	Design a research problem using sound scientific principles.
CO3	Understand the standards and practices used in industry/ research organization/In-house research
CO4	Perform statistical operations and analyze results
CO5	Interpret results and derive new information
CO6	Work individually or in a team to identify, troubleshoot and build products for environmental and societal issues with effective communication skills and communicate results to a scientific audience.

Pre Requisite : All core theory and lab courses

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1		S												
CO2			S						S					
CO3					M									
CO4		M		S										
CO5								M						
CO6					S		S		S	S				S

Course Assessment methods:

Direct	Indirect
1. Project reviews 2. viva 3. demo	1. Course End Survey



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U18VEP7507**GLOBAL VALUES**
(Mandatory)

L	T	P	J	C
0	0	2	0	0

Course Outcomes

After successful completion of this course, the students should be able to:

CO 1: Aware of the concept of Universal Brotherhood and support the organizations which are working for it

CO 2: Follow the path of Ahimsa in every aspect of their life

CO 3: Uphold the Universal declaration of Human Rights

CO 4: Understand the unequal distribution of wealth in the World and bestow their effort towards inclusive growth

CO 5: Sensitize the environmental degradation and work for the sustainable development

CO 6: Amalgamate harmony through Non-violence and edify the nation headed for Upholding development

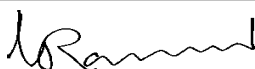
Pre-requisites :

1. U18VEP1501 / PERSONAL VALUES
2. U18VEP2502 / INTERPERSONAL VALUES
3. U18VEP3503 / FAMILY VALUES
4. U18VEP4504 / PROFESSIONAL VALUES
5. U18VEP5505 / SOCIAL VALUES
6. U18VEP6506 / NATIONAL VALUES

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1							M					
CO2								S				
CO3									M			
CO4						S						
CO5											M	
CO6												S

Course Assessment methods

Direct
1. Group Activity / Individual performance and assignment 2. Assessment on Value work sheet / Test
Indirect
1. Mini project on values / Goodwill Recognition



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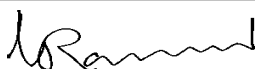
Values through Practical activities:

- 1. Universal Brotherhood :**Meaning of Universal Brotherhood- Functioning of Various organization for Universal human beings -Red Cross, UN Office for Humanitarian Affairs – Case study on humanitarian problems and intervention - Active role of Students/Individual on Universal Brotherhood.
- 2. Global Peace, Harmony and Unity :**Functions of UNO - Principal Organizations - Special organization – Case study relating to disturbance of world peace and role of UNO – Participatory role of Students/Individual in attaining the Global peace and Unity.
- 3. Non-Violence :**Philosophy of nonviolence- Nonviolence practiced by Mahatma Gandhi – Global recognition for nonviolence - Forms of nonviolence - Case study on the success story of nonviolence– Practicing nonviolence in everyday life.
- 4. Humanity and Justice:** Universal declaration of Human Rights - Broad classification - Relevant Constitutional Provisions– Judicial activism on human rights violation - Case study on Human rights violation– Adherence to human rights by Students/Individuals.
- 5. Inclusive growth and sustainable development :** Goals to transform our World: No Poverty - Good Health - Education – Equality - Economic Growth - Reduced Inequality – Protection of environment – Case study on inequality and environmental degradation and remedial measures.

Workshop mode

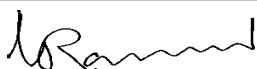
REFERENCES

1. TEACHING ASIA-PACIFIC CORE VALUES OF PEACE AND HARMONY – UNICEF www.unicef.org/.../pdf/Teaching%20Asia-Pacific%20core%20values.pdf
2. THREE-DIMENSIONAL ACTION FOR WORLD PROSPERITY AND PEACE- IIM Indore - www.iimdr.ac.in/.../Three-Dimensional-Action-for-World-Prosperity-and-Peace-Glo...
3. MY NON-VIOLENCE - MAHATMA GANDHI www.mkgandhi.org/ebks/my_nonviolence.pdf
4. HUMAN RIGHTS AND THE CONSTITUTION OF INDIA 8th ... - India Juris www.indiajuris.com/uploads/.../pdf/11410776927qHuman%20Rights%20080914.pdf
5. THE ETHICS OF SUSTAINABILITY – Research Gate www.researchgate.net/file.PostFileLoader.html?id...assetKey..



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SEMESTER VIII



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U18FTP8701 PROJECT PHASE II

L	T	P	J	C
0	0	0	24	12

Course Outcomes

After successful completion of this course, the students should be able to

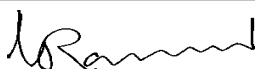
CO1	Ability to survey literature relevant to the topic under consideration
CO2	Design a research problem using sound scientific principles.
CO3	Understand the standards and practices used in industry/ research organization/In-house research
CO4	Perform statistical operations and analyze results
CO5	Interpret results and derive new information
CO6	Work individually or in a team to identify, troubleshoot and build products for environmental and societal issues with effective communication skills and communicate results to a scientific audience.

Pre Requisite : All core theory and lab courses

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1		S												
CO2			S						S					
CO3					M									
CO4		M		S										
CO5								M						
CO6					S		S		S	S				S

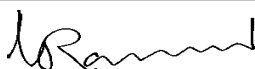
Course Assessment methods:

Direct	Indirect
1. Project reviews 2. viva 3. demo	1. Course End Survey



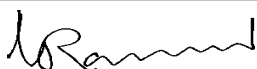
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PROGRAMME ELECTIVES



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FASHION DESIGNING



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U18FTE0001 APPAREL PRODUCT DEVELOPMENT

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Acquire knowledge on segments of fashion industry and able to classify apparel products, influence of customer, and different generations behind the costume changes	K2
CO2	Define knowledge on developing fashion concepts such as concept generation, concept screening, line concept etc. Create fashion idea, manipulation of design elements.	K3
CO3	Ability to identify creative design, develop prototype, line adoption. Knowledge on technical design.	K6
CO4	Acquire skills on product positioning strategy, sizing and fit in material selection, final assembly and finishing, garment presentation.	K3
CO5	Acquire knowledge on defining proto development – fabric sourcing and selection. Analysis of functional and aesthetics of fabrics and trims.	K5
CO6	Development of Visualization and communication design on to manufacturability.	K6

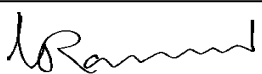
Pre Requisite : Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
Cos	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S	S	S								
CO2	S	S	S	S								
CO3	M	S	S	S	M							
CO4	S	S	S									
CO5		S	S		M					M		
CO6		S	S		S				S	S		

Course Assessment methods:

Direct	Indirect
Internal tests, Assignment, Group presentation End Semester Exam	Course End Survey

Course Content**FASHION INDUSTRY OVERVIEW :****9 Hours**


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Segments of the fashion industry – history and categories, Classification of apparel products. Background to the world of fashion- influence of the customer; different generations and motivations behind the changes.

DEVELOPING FASHION CONCEPT:

9 Hours

Design logic of apparel products, concept generation, concept screening. Line concept – Synthesize current issues, describe fashion trends, establish line direction, describe materials, identify group concepts and analyze current line. Principles of creative fashion ideas. Manipulation of Design Elements - silhouette, proportion, pattern, garment details, accessories, texture, prints, colour, fabric.

LINE DEVELOPMENT AND PRESENTATION:

9 Hours

Creative design - Develop designs, Create prototype. Line adoption – Determining styles and balancing assortments. Technical design – perfect styling and fit, engineer production patterns, samples, costing and grade patterns. Presentation: Review for adoption, line review, line / style release.

ANALYSIS OF PRODUCT DEVELOPMENT:

9 Hours

Product Positioning Strategy – Sizing and fit in material selection – Final assembly and finishing – Garment presentation.

PROTO DEVELOPMENT:

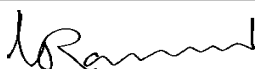
9 Hours

Fabric Sourcing and Selection. Analysis of functional and aesthetic characteristics of fabrics and trims - Co-ordinating with availability, ability to enhance product aesthetics and functionality and cost. Visualization and Communication design into manufacturability.

Theory : 45 Hours Total: 45 Hours

REFERENCES

1. Maurice J. Johnson and Evelyn C. Moore, “Apparel Product Development”, Second Edition, Prentice Hall Upper saddle river, New Jersey, 2001.
2. Ruth E. Glock and Grace I. Kunz, “Apparel Manufacturing - Sewn Product Analysis”, Prentice Hall, New Jersey, Fourth Edition, 2005.
3. Kathryn McKelvey and Janine Munslow, “Fashion Design: Process, Innovation and Practice”, Blackwell Publishing, USA, 2005.
4. Donald R. Lehmann, Russell S. Winer, “Product Management”, M.C. Graw Hill International, 1996
5. Mastudaira T and Suresh M.N., “Design Logic of Textile Products”, Textile Progress, Textile Institute, Manchester, 2007.



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U18FTE0002

SURFACE ORNAMENTATION

L	T	P	J	C
3	0	0	0	3

Course Outcomes (COs)

After successful completion of this course, the students should be able to

CO1	Acquire skills in design development for the traditional designs and techniques of India	K4
CO2	Develop knowledge in classification and gain skill to select parameters for raw materials and tools for surface ornamentation	K2
CO3	Acquire skills in identifying and developing samples for different hand embroidery stitches	K3
CO4	Acquire skills in identifying and developing samples for different traditional embroidery stitches	K3
CO5	Recognize and identify the machine embroidery types and processes	K3
CO6	Develop suitable designs and surface ornamentation for new product development	K6

Pre Requisite

U18 FTI3202 Concepts of Fashion and Design

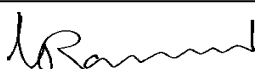
CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
Cos	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	M	S	S		S		S	S					S	
CO2	M	S	M										S	
CO3	M	S	M										S	
CO4	S	S											S	
CO5	S	M											S	
CO6	M	M	S	S	S				S	S	S	S	S	M

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment – Mini project 3. Group Presentation 4. End Semester Exam	1.Course Exit Survey

Course Content**INTRODUCTION TO DESIGN DEVELOPMENT:****11 hours**

Introduction & Overview of the traditional designs of India-Analysis of characteristics and



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design development for products using techniques like block printing, stenciling, screen printing, tie and dye, batik, Kalamkari, Painting & Embroidery.

EMBROIDERY AS SURFACE ORNAMENTATION:

7 Hours

Meaning and importance- Types and Classification. Study and compatibility of needles, thread, frames, backing materials and fabrics for embroidery. Attachments to sewing machines for embroidery.

HANDEMBROIDERY&INDIANTRADITIONALEMBROIDERY:

11Hours

Hand embroidery stitches- classification- running, couching, buttonhole, satin, long and short, wheat, chain, stem, herring bone, crossstitch, knotted stitches, fish bone.

Indian traditional embroidery: Phulkari, Kasuti, Kashida, Kutch work, Chikkankari, Kantha, Tribal embroidery stitches, designs, colors and materials used.

MACHINE EMBROIDERIES AND SURFACE ORNAMENTATION: 7 Hours

Types & working methods - eyelet work, cut work, lace work, drawn thread work, drawn fabric work, patch work, mirror work, applique, shaded embroidery, shadow work, badalawork, bead and sequins work and bobbin thread embroidery.

PRODUCT DEVELOPMENT:

9 Hours

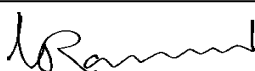
Development process: planning a collection, designer boards and Look book preparation for a new product with inspiration as surface ornamentation.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

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.
4. Shailaja D. Naik, "Traditional Embroideries of India", A.P.H Publishing Corporation, New Delhi, 1996.
5. Gini Stephens Frings, "Fashion-From Concept to Consumer", Prentice Hall, New Jersey, 1999.
6. Sheila Paine, "Embroidered Textiles", Thames and Hudson Ltd., 1990.
7. Kathryn McCelvey and Janine Munslow, —Fashion Design: Process, Innovation and Practice, Blackwell Publishing, USA, 2005.
8. Diane T and Cassidy T, —Color forecasting, Blackwell Publishing, 2005
9. Russel Gillow and Nicholas Barnard, —Traditional Indian Textiles, Thames and Hudson Ltd., London, 1991.



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U18FTE0003 VISUAL MERCHANDISING

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Define and appreciate the significance and role of visual merchandising in a retail environment, in order to effectively present the merchandise to the consumers
CO2	Classify the various elements of Visual presentation and understand their significance in visually presenting a display
CO3	Analyze and identify the best suitable environment for merchandise including interior, exterior and point of displays
CO4	Appraise on various techniques used in presenting merchandise
CO5	Plan on optimizing the merchandise and retail space to customers
CO6	Summarize the various features available in a computer controlled visual merchandising

Pre Requisite:

U18FTI3202 Concepts of Fashion and Design

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
Cos	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1		S											S	S
CO2		S								S				S
CO3		S								S			S	
CO4		S	S							S			S	S
CO5				M										
CO6					M									S

Course Assessment methods


Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1.Course Exit Survey

Course Content**FUNDAMENTALS OF VISUAL MERCHANDISING****9 Hours**

Visual Merchandising-definition, objectives and scope.Types of display and display settings. Retail stores and approaches of visual merchandising -Types of retail stores, store atmospherics, Approaches in Visual Merchandising in various stores-In house staffing,DepartmentStore Approach, Small Store Approach. Role of Visual Merchandising in changing face of retailing.

ELEMENTS OF VISUAL PRESENTATION**5 Hours**

Overview of the various elements – Color, lighting, line and composition, graphics and signage, store exteriors and interiors, sensory stimulants like scent, sound etc. Application of color schemes and color psychology to create moodingarmentdisplay.



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MANNEQUINS AND FIXTURES**6 Hours**

Mannequins and other human forms, alternatives to mannequins. Criteria for selection of fixtures, dressing fixtures, modular fixtures. Store exterior – Signs, Marquees, Outdoor Lighting, Banners, Planters, Awnings, Windows in Storefront Design, store fronts.

STORE INTERIORS AND POINTS OF DISPLAY**5 Hours**

Focal points, island displays, risers and platforms, the runway the catwalk, counters and display cases, museum cases, demonstration cubes, ledges, shadow boxes, enclosed displays, fascia, t-walls. Point of purchase display, industrial display, fashion shows, trade organizations and sources.

DISPLAY TECHNIQUES**5 Hours**

Attention getting devices, familiar symbols, masking and proscenia – purpose and techniques used

STORE PLANNING AND EXECUTION OF A VISUAL PRESENTATION 10 Hours

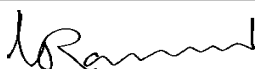
Store layout planning-grid, racetrack, freeform and their direction of flow. Floor plans and reading of floor plans – Plan-o-gram- definition, purpose and planning -theme, ensemble, racks, shelves, bins, etc. Assortment planning- Assortment planning, Optimize apparel assortments Display calendar and planning a display, scheduling the promotion, budgeting and safety factors in visual merchandising.

COMPUTER AIDED VISUAL MERCHANDISING**5 Hours**

CAD in store design, Information technology in assortment planning and inventory management.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Pegler M.M., “Visual Merchandising and Display”, IV Edition, Fair child Publications, New York, 2001.
2. Diamond J., Diamond E., “Contemporary Visual Merchandising”, Prentice Hall Inc. New Jersey 2003.
3. Diamond E., Fashion Retailing – A Multichannel Approach, II Edition, Prentice Hall Inc. New Jersey 2006.
4. Rath P.M., Peterson J., Greensley P., Gill P., Introduction to Fashion Merchandising, Delmar Publishers Inc., New York 1994.
5. Phillips P.M., Fashion Sales Promotion, II Edition, Prentice Hall Inc, New Jersey, 1996.
6. Curtis E., Fashion Retail, John Wiley and Sons Ltd, England, 2004.



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U18FTE0004 FASHION BOUTIQUE MANAGEMENT

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Acquire knowledge on creating a business plan	K3
CO2	Analyze the factors affecting boutique design and development	K4
CO3	Acquire knowledge on boutique operations management	K3
CO4	Create new strategies for marketing and promotion	K6
CO5	Understand the procedure for financial planning and startup formalities	K5
CO6	Develop project proposal to start a Fashion Boutique	K6

Pre Requisite : Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PSO 1	PSO 2
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO12		
CO1	M			S			S						M	
CO2		M	S		S	S	S			S		M	W	
CO3		S	S		S	S	S	S		S		S	S	S
CO4		M		S	M				S	S		S	S	S
CO5		S									S	M	S	
CO6				S					M	M	S		S	

Course Assessment methods:

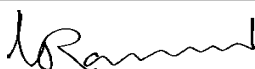
Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

Course Content**Business plan****9 Hours**

Scope for boutiques – creation of business plan for starting a boutique- parts of a business plan – components of a business plan – types of business plans – Competitive analysis & case study analysis -Assessment of Feasibility (Technical, Financial & Marketing) - finding the right plan

Boutique design & development**9 Hours**

Location decision- importance, levels and determining factors. Types of location, types of



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consumer goods and location decision. Exterior Design, Store Layout & Space management, Atmospherics, colour planning, physical materials in store designing, atmospherics in the context of internet retailing.

Boutique Operations Management

9 Hours

Business Model – online & offline - store design, visual merchandising & display, customer service, budgeting & accounting, money and credit handling, shoplifting prevention, premises maintenance, systems & staff management, inventory optimization and management, administration and supply chain management

Marketing & Promotion

9 Hours

New marketing strategies – loyalty programs -sales promotion through advertising, public relations, direct marketing, personal selling, promotion mix; digital marketing, social media leverage – email & influencer marketing – future trends

Financial Planning & Project Management

9Hours

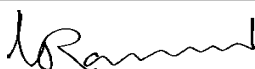
Formats in business ownership- registration & licensing- financial support from Government and institutions- Taxes - government incentives (financial & non financial) – Steps and formalities to start a boutique – evaluation and sickness prevention activities

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Stewart B., “Opening Boutique Guide”, Bull City Publishing, 2016.
2. <https://www.bizmove.com/starting-business/how-to-start-a-boutique-business.pdf>
3. Wright C, “Business Boutique”, Ramsey Press, Tennessee, 2017.
4. <https://www.thebalancesmb.com/department-store-mission-statements-4068552>
5. <https://www.entrepreneur.com/article/38290>
6. <https://www.smartsheet.com/store-layout>
7. <https://www.smartsheet.com/retail-store-operations>
8. <https://www.shopkeep.com/blog/promotion-ideas-for-retail-stores>



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U18FTE0005 TRADITIONAL INDIAN TEXTILES AND CRAFTS

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Understand the various century's costumes and traditional textiles in India	K1
CO2	Acquire knowledge on the concepts on colour, motif and specialization in different state costumes of India	K2
CO3	Classify regional embroideries of India	K3
CO4	Identify a specific embroidery style of India on the basis of colours, motifs and layout	K4
CO5	Identify the influencing factors for development and evolution of a specific embroidered textile.	K4
CO6	Choose and utilize traditional accessories in costumes	K5

Pre Requisite : U18 FTI3202 Concepts of Fashion and Design

CO/PO Mapping														
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1														
CO2														
CO3														
CO4														
CO5														
CO6														

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

Course Content
INTRODUCTION
9 Hours

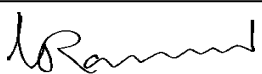
Evolution of clothing – Origin & functions of clothing – beginning of civilization – Greek, Roman and Egyptian. Study of Historical designs of different countries – Persian, Mughal, Chinese, Japanese and American.

NORTHERN TRADITIONAL TEXTILES
9 Hours

Traditional Woven textiles of North India – Brocades of Banaras, Balucheri, Chanderi and Tanchoi.

Traditional Embroideries of North India – Kashida, Phulkari, Chambarumal and Chikankari. Traditional costumes of North States of India – Jammu & Kashmir, Punjab, Himachal Pradesh, Haryana, Uttaranchal and Uttar Pradesh.

SOUTHERN TRADITIONAL TEXTILES
9 Hours


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Traditional woven textiles of Southern states of India – Paithani and Pitamber, Pochampalli, Kancheevaram, Himrus, Kalamkari, Pipli, Mysore silk, Aarni Silk.

Traditional embroideries of South India – Thoda embroidery, Kasuti of Karnataka and Aari embroidery.

Traditional costumes of Southern states of India – Tamil Nadu, Kerala, Karnataka and Andhra Pradesh.

EASTERN TRADITIONAL TEXTILES

9 Hours

Traditional woven textiles of Eastern states of India – Dacca muslin, Applique work of Bihar. Traditional embroideries of East India – Kantha of Bengal, Sujaini embroidery, Manipuri embroidery and Nagaland embroidery.

Traditional costumes of Eastern states of India – West Bengal, Bihar, Jaharkand, Arunachal Pradesh, Assam, Sikkim, Nagaland, Manipur, Mizoram, Meghalaya and Tirupura.

WESTERN TEXTILES

9 Hours

Traditional woven textiles of Western states of India – Maheshwari sarees of Madhya Pradesh, Patola, Bandhini and Amrus.

Traditional embroideries of Western India – Sindhi embroidery – Kutch, Ari Bharath, Kanbi Bharath, Mochi Bharath, Shisha embroidery.

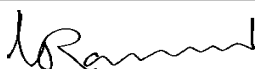
Traditional costumes of Western states of India – Rajasthan, Gujarat, Maharastra, Madhya Pradesh, Chhattisgarh and Goa.

Theory: 45 Hours

Total: 45 Hours

REFERENCES

1. John Gillow & Nicholas Barnad, “Traditional Indian Textiles”. Thames & Hudson, 1993
2. Rta Kapur chishti & Amba Sanyal, “Saris of India – Madhya Pradesh,” Wiley Eastern Ltd. 1989
3. The Guide to Historic Costumes, Karen Baclawski, Drama Publishers (1995)
4. Ancient Indian Costume, Roshen Alkazi, Art Heritage (1983)
5. Martand Singh, “Saris’ of India – Bihar & West Bengal”, Wiley Eastern Ltd. 1993
6. Costumes and textiles of Royal India – Ritu Kumar Published by Christie’s Books.
7. Impressions – a classic collection of Indian textiles design (with cd) Prakasha. K
8. Traditional Embroideries of India Shailaja D. Naik



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U18FTE0006 INTIMATE APPARELS

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Categorize intimate apparel and choose suitable fabrics	K5
CO2	Appraise on basic principles in designing and construction of various types of inner wear for men and women	K3
CO3	Develop skills in designing intimate men's garments	K6
CO4	Develop skills in designing intimate women's garments.	K6
CO5	Relate the suitability of accessories and other construction methods of producing intimate Apparels	K5
CO6	Evaluate the performance of Intimate apparel	K4

Pre Requisite :

U18FTT3003 Pattern Making and Adaptation

U18FTI4203 Apparel Design and Development

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PSO1	PSO2
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		
CO1	S												S	
CO2		S											S	M
CO3		S	M										M	
CO4	M		W										M	
CO5		S	S										M	M
CO6			S	S	M								S	

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

Course Content**INTIMATE APPAREL****9 Hours**

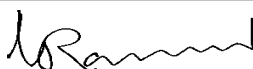
Definition-Types- Night Wear, Under Wear, Classification of Kid's, Women's and Men's Intimates. Quality requirements for selecting suitable fibers, fabrics, designs for intimate apparels. Physical and physiological health effect of Intimate apparel. Latest finishes for intimate apparels

MEN'S INTIMATE APPARELS**9 Hours**

Introduction, Design and development- measurements - Step by step drafting procedure and construction sequence - vests, briefs, trunk, pyjama and bathrobe.

WOMEN'S INTIMATE APPAREL**9 Hours**

Introduction, Design and development - measurements - Step by step drafting procedure and construction sequence - waist petticoat, bra, panty, camisole, night dress, negligee



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INTIMATE APPAREL ACCESSORIES**4 Hours**

Accessories - bra wire, hook and eye tape, ring and slider, buckle, plastic bone, Elastics, Threads etc. used for intimate apparel.

INTIMATE APPAREL PRODUCTION TECHNOLOGY**5 Hours**

Principles, methods, technical aspects and controls of lamination, moulding and seamless knitting technology for production of intimate apparels.

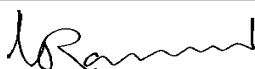
PERFORMANCE EVALUATION OF INTIMATE APPAREL**9 Hours**

Functional Requirements – comfort – sewability – appearance retention – durability - after care
Performance Evaluation – thermal properties – moisture permeability – liquid transport properties – low stress mechanical properties – dimensional stability & skewness stability – colour fastness – wearer trials

Requirements for engineering intimate apparels – Fibre & yarn characteristics Fabric composition, thickness structure

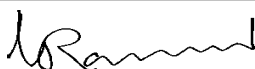
Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. W. Yu, J. Fan, S.C. Harlock, S.P. Ng “Innovation and Technology of Women’s Intimate Apparel”, Woodhead Publishing Limited, England, 2006.
2. Ann Haggard, “ Pattern Cutting For Lingerie, Beach Wear And Leisure Wear”, Black Well Science Limited, France, 2001.
3. Lynn Nottage, “Intimate Apparel / Fabulation”, Theatre Communications Group, USA, 2006.
4. Stokes Terry, “Intimate Apparel”, Brooklyn: Release Press, USA, 1980.
5. Singer, “Sewing Lingerie”, Cy Decosse Incorporated, Mexico, 1991.



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APPAREL TECHNOLOGY



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U18FTE0007 CLOTHING SCIENCE FOR APPAREL ENGINEERING**Course Outcomes**

After successful completion of this course, the students should be able to

L	T	P	J	C
3	0	0	0	3

CO1	Acquire Knowledge on the basic requirements in the design of apparel engineering	K2
CO2	Recognize and associate the objective and subjective evaluation of clothing fit	K4
CO3	Recognize and associate the Effect of fiber properties, yarn structure and fabric construction on the fabric aesthetic & appearance	K4
CO4	Recognize and associate the Effect of fiber properties, yarn structure and fabric construction on the fabric dimensional stability.	K4
CO5	Acquire Knowledge and associate the Effect of fiber properties, yarn structure and fabric construction on the fabric Serviceability.	K4
CO6	Enhance knowledge and associate the effect of fiber properties, yarn structure and fabric construction on the fabric handle & clothing comfort	K4

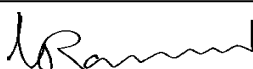
Pre Requisite:

U18FTT1001 Fibre science
 U18FTT3001 Yarn technology
 U18FTT 4001 Fabric Formation
 U18FTT5003 Knitting Technology
 U18FTI 5202 TextileandApparel Quality Evaluation

CO/PO Mapping														
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	S												
CO2	S	S												
CO3	S	S											S	
CO4	S	S											S	
CO5	S	S											S	
CO6	S	M											S	

Course Assessment methods

Direct	Indirect
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1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1.Course Exit Survey
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Course content**REQUIREMENTS FOR APPAREL ENGINEERING****5 Hours**

Introduction to apparel design & its types – aesthetic, functional, exploratory, incremental. Requirements for clothing design - physiological, biomechanical, ergonomic, psychological requirements. Process, steps involved in clothing design.

SIZING SYSTEMS AND EVALUATION OF CLOTHING FIT**10 Hours**

Development of sizing system. Principles of sizing system. Definition, Importance, Standards, influence of clothing fit. Testing methods - objective and subjective evaluation of fit.

AESTHETICS AND APPEARANCE**9 Hours**

Selection of fibre, yarn structure and fabric construction; their effect on pilling, fastness, lusture and Shade variation. Fabric properties related to appearance.

DIMENSIONAL STABILITY: Study of factors that affect hygral expansion, relaxation shrinkage, swelling shrinkage, felting shrinkage. Dimensional stability to dry cleaning and dry heat with respect to fibre properties.

SERVICEABILITY**9 Hours**

Study of Factors affecting properties such as snagging, abrasion resistance, tearing strength, tensile strength, bursting strength, fusing, Seam strength and slippage with respect to fiber properties, yarn structure and fabric design.

FABRIC HANDLE**3 Hours**

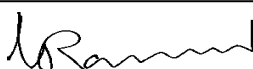
Objective evaluation of fabric hand by KES and FAST.

CLOTHING COMFORT**9 Hours**

Effect of fibre properties, yarn structure, fabric design, fabric construction and treatments on the fabric properties such as air permeability, breathability, moisture transport – wetting and wicking; clothing comfort – thermal comfort, heat and moisture transfer, moisture sensations; tactile comfort – pressure sensations.

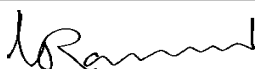
Theory: 45 Hours**Total: 45 Hours****REFERENCES**

1. Engineering Apparel Fabrics and Garments, Woodhead Publishing Textiles, by J Fan, L. Hunter, 2009
2. Saville B.P, “Physical Testing of Textiles”, The Textile Institute, Wood head Publishing Ltd, Cambridge, 1999
3. Fan J., Yu. W and Hunter L., Clothing Appearance and fit, Textile Institute, Woodhead Publishing Limited, England, 2004
4. Ed.Postle R., Kawabata.S and Niwa M., “Objective Evaluation of Fabrics”, Textile Machinery Society, Japan, Osaka, 1983.



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5. Sandra Betzina, Fast Fit-Easy Pattern Alterations for Every Figure, The Taunton press inc., Singapore, 2003
6. Biomechanical engineering of textile and clothing, edited by Y. Li and X-Q. Dai, Woodhead Publishing Limited, England, 2006
7. Design of apparel fabrics: role of fibre, yarn and fabric parameters on its functional attributes, Journal of Textile Engineering, Vol.54, No.6, 179-190, 2008
8. Design and engineering of functional clothing, Indian Journal of fiber & Textile Journal, Vol.36, pp. 327-335, December 2011



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U18FTE0008 APPAREL FINISHING AND CARE

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Acquire knowledge on types of finishes on fabrics and garments.	K2
CO2	Analyse and classify the different conditions and chemicals need for finishing of materials	K3
CO3	Acquire knowledge on Denim Finishes and advanced finishes.	K3
CO4	Discuss on un-conventional finishes and their applications	K2
CO5	Classify and apply skill to identify stains and removal technique in apparel.	K3
CO6	Acquire knowledge on sustainable and green finishing methods	K2

Pre Requisite :

U18FTI5201 Textile Chemical Processing

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
Cos	Programme Outcomes(POs)												PSOs	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PO1 2	PSO 1	PSO 2
CO1	M		S			S						M	M	S
CO2	M	W	S			S						M	M	S
CO3		W	S			S						M	M	S
CO4			S			S	S					M	M	S
CO5		M	S	S		S						M	M	S
CO6						S	S	M			S	M	M	S

Course Assessment methods:

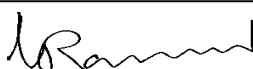
Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

Course Content**INTRODUCTION****6 Hours**

Reason for finishing, Classification of finishing, Mechanical and chemical finishing routes. Aesthetic finishes-Stiffening, Softening, Different types of Calendered effect, Brushing, Sueding, Burn out finishes

FUNCTIONAL FINISHING**9 Hours**

Shrinkage control -Sanforizing, Compacting & Stentering, Water repellent/proof, flame retardant, heat resistant, mildew proof, moth proof, anti-static, soil release, UV protection, anti microbial and elastomeric finish (without compaction). Resin finishing-durable press, wash-n-wear, wrinkle free



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SPECIAL FINISHES**9 Hours**

Denim processing-general method, Process conditions, machineries, chemicals used for various special effects-stone wash, acid wash, enzyme wash, bio-polishing, sandblasting, ozone and laser fading, tinted denim, over dyed denim, reverse denim, pseudo denim, stretch denim, peach skin effect, quick wash denim, vintage wash, enzyme- soda wash, dextrose-caustic wash, sueding wash, golf ball wash, tie'n' wash, marble wash and crush finish.

UNCONVENTIONAL FINISHING METHODS**9 Hours**

Plasma treatment, finishing using micro capsules, nano and electro chemical treatment of textile materials, self cleaning and phase changing materials. Sustainable and green processing.

GARMENT FINISHING**3 Hours**

Garment Dyeing Machines for Finishing, Selection of sewing thread, accessories w.r.t garment dyeing and finishing. Preparation of fabrics for garment dyeing and finishing.

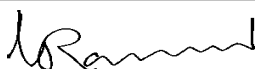
APPAREL CARE**9 Hours**

Types and characteristics of stains, Identification of stains, selection of stain removers, Stain removal methods- Oil, colour matter, Garment laundering equipments and procedures, Use of care labels and standards/norms for care labels.

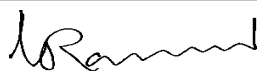
Evaluation and Standards for finished garments and accessories.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Nomeia D, Souza., "Fabric Care", New Age International (P) Ltd, Chennai, 1998.
2. Shenai V A, "Technology of Textile Finishing", Sevak Publications, Mumbai, 1995.
3. Dr. G. Nalankilli, Dr. S. Jayaprakasam, "Textile Finishing" SSMIIT Staff's and Student's Co-op society. 1997
4. "Garment Wet Processing Technical Manual", AATCC/SDC, 1994.
Whittall N S, "Laundering and Dry Cleaning", vol. 8, Textile Progress, 1996.
5. Pradip V Mehta, "An Introduction to Quality Control for the Apparel Industry", ASQC Quality Press, 1992.
6. Goldman R F and Lyle D S, "Performance of Textiles" John Wiley and Sons, New York 1987.
7. Hall A J, "Textile Finishing", Elsevier Publishing Co. Ltd, 1986.
8. Richard A Scott, "Textiles for Protection", The Textile Institute, Woodhead Publishing Limited, CRC Press. 2005.
9. W.D. Schiendler and P.J. Hauser, "Chemical Finishing of Textiles",
The Textile Institute, Woodhead, 2004.



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Signature of BOS chairman, FT

U18FTE0009

FUNCTIONAL CLOTHING**Course Outcomes**

After successful completion of this course, the students should be able to

L	T	P	J	C
3	0	0	0	3

CO1	Summarize the classification and design requirements of various classifications of functional clothing	K2
CO2	Choose the requirements of functional clothing as per the end use of the consumer	K3
CO3	Appraise technical specifications for functional clothes	K5
CO4	Choose suitable textile raw materials suitable for developing functional clothes	K6
CO5	Apply the knowledge on textiles processes in designing functional clothing	K3
CO6	Acquire knowledge on the evaluation methods and standards available to evaluate the various functional clothing	K2

Pre Requisite :

U18FTI4203 Apparel Design and Development

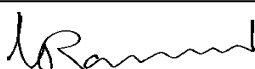
CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
CO s	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PS O 1	PS O 2
CO 1		S	S			S							S	
CO 2	S	S											S	
CO 3	S	S	S									M	S	S
CO 4	S	S	S									M	S	S
CO 5				S			M						S	
CO 6			S	S								S	S	

Course Assessment methods:

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

Course Content**INTRODUCTION****8 Hours**

Functional clothing - Classification, requirements, design and engineering- steps in designing, pattern engineering, functional fit. Performance analysis of functional clothing.



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MEDICALWEAR**7 Hours**

Classification of medical textiles and their functions– Textile materials used for implants and non-implants, extra corporeal devices, Healthcare and hygiene products. Therapeutic and bio sensing garments – Design and applications.

PROTECTIVE WEAR**9 Hours**

Materials used, requirements and functions of flame resistant protective clothing, chemical protective clothing, mechanical protectiveclothing– cut, slash, ballistic and blunt impact protection, electricalprotectiveclothingand radiation protection.

SPORTSWEAR**8 Hours**

Materials used, requirements and functions of sportswear in fatigue reducing, performance monitoring and enhancing- Materials used, requirements and functions of sports footwear - Design, fit, materials, components and their functions.

VANITY CLOTHING**4Hours**

Materials used, requirements and functions of vanity clothing- Body shaping, support and contouring for enhanced appearance

CLOTHING FOR PEOPLE WITH SPECIAL NEEDS**3Hours**

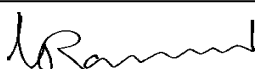
Materials used, requirements and functions of clothing for people with special needs- enabling clothing for elderly, infants and disabled.

CROSS FUNCTIONAL CLOTHING**6Hours**

Materials used, requirements and functions of cross functional clothing- Space suits, combat clothing and wearable electronics

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. HorrocksA. R. andAnandS. C, "Handbook of Technical Textiles", The TextileInstitute,WoodheadPublications,Cambridge,UK,2000
2. AdanurS.,WellingtonSears"HandbookofIndustrialTextiles", Technomic PublishingCo.Lanchester,USA,1995
3. VigoT.L.,IntelligentFibres,JournalofTextileInstitute ,90,Part3,TextileInstitute, 1999
4. AnandS., "MedicalTextiles",TextileInstitute,UK,1996
5. SanjayGupta,"SmartTextiles– TheirProductionandMarketingStrategies",BhumicaPrinters,NewDelhi,2000
6. Tao X., "Smart Fibres, Fabric and Clothing", Textile Institute, Woodhead PublishingLimited,Cambridge,2001



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U18FTE0010 ERP AND MIS IN APPAREL INDUSTRY

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Acquire knowledge on basics of ERP and MIS	K2
CO2	Acquire knowledge on the application and modules of ERP in apparel Industry.	K3
CO3	Acquire Application strategy of Information Systems in apparel industry	K4
CO4	Develop knowledge on internet and electronic commerce and their day to day importance	K3
CO5	Describing and developing knowledge on transforming Information systems to the business operations	K3
CO6	Developing skills on supporting technically on ERP system developers for apparel industries.	K4

Pre Requisite : NIL

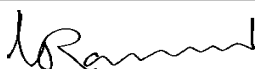
CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P O 10	PO1 1	PO1 2	PS O 1	PS O 2
CO 1	S				M				M				M	M
CO 2	S				M				M				M	M
CO 3	S				M					M				
CO 4		S			M				M	M			M	M
CO 5		S			M					M				
CO 6		S			M				M	M			M	M

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

Course Content**INTRODUCTION****9 Hours**

An overview and features of ERP, MIS integration, ERPdrivers, Trends in ERP, ERP in India. ERP system perspective – Management Information System, Operations Support



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System, Transaction Processing System, Network Structure of ERP system, ERP workflow, Process modeling for ERP systems, Communication in ERP systems, OLTP, (On Line Transaction Processing), OLAP (On Line Analytical Processing), Enterprise Integration application tools for ERP.

RESOURCE MANAGEMENT PERSPECTIVE

9 Hours

Business modules in ERP packages, Finance, Production, Human Resource, Plant Maintenance, Materials Management, Quality Management, Sales and Distribution, Resource Management, Business Process Reengineering, Relationship between ERP and BPR, ERP Implementation Lifecycle, Implementation methodology, ERP Project Management and Monitoring. ERP and E-Commerce, ERP Culture, ERP and CRM, ERP and SCM, ERP selection issues, ERP in Public Sector Enterprises, Pre- and Post-implementation issues, ERP Vendors, Key ERP consultants in India, Future directions in ERP.

BASICS OF INFORMATION SYSTEM

9 Hours

Introduction to Information system in business, Need for Information Technology, System concept, Components of an information system, Information system resources, Information system activities, recognizing information system. Expanding role of information systems, Operating support system, Management support systems.

INTERNET AND ELECTRONIC COMMERCE

9 Hours

Introduction, Business use of internet, Interactive marketing, Business value of the internet, Customer value and the internet. Fundamentals of Electronic Commerce (EC), EC applications, Business-to-Consumer commerce, Business to Business commerce, Electronic payments and security.

INFORMATION SYSTEMS FOR BUSINESS OPERATION:

9 Hours

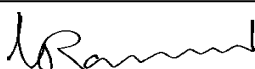
Applications of intranets, intranet technology resources, the business value of intranets, the role of Extranets, enterprise collaboration systems. Information systems for marketing, manufacturing, human resources, accounting, financial, transaction processing, managerial and decision support, Information systems for strategic advantages, Strategic application and issues in IT, ethical and societal challenges of information technology.

Theory: 45 Hours

Total: 45 Hours

REFERENCES

1. V.K.Garg, Venkat and N.K.Krishna, "ERP Concepts and Practices", 1st edition, PHI Publications, 1997.
2. James A.O'Brien, "Introduction to Information Systems", Tata McGrawHill, New Delhi, 2005.
3. Alexis Leon, "ERP Demystified", 1st edition, Tata McGrawHill, New Delhi, 2000.
4. S.Sadagopan, "ERP: A Managerial Perspective", 1st edition, Tata McGraw Hill, New Delhi, 1999.
5. Langenalter, A.Gary, "Enterprise Resources Planning and Beyond", 1st edition, St.Lucie Press, USA, 2000.
6. Diwan, Parag and Sharma, Sunil, "Enterprise Resource Planning: A Manager's Guide", 1st edition, 1999.
7. E.Turban, E.McLean and J.Wetherbe, "Information Technology for Management: Making Connections for Strategic Advantage", John Wiley and Sons, New Jersey, 2001.
8. W.S.Jawadekar, "Management Information Systems", Tata McGrawHill, New Delhi, 2004.



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U18FTE0011

HOME FURNISHINGS

L	T	P	J	C
3	0	0	0	3

Course Outcomes**After successful completion of this course, the students should be able to**

CO1	Generalize knowledge about the varieties of home furnishing materials and finishing methods	K3
CO2	Developing skills in the selection of different varieties of home furnishing materials in terms of sizes, shapes and patterns and construction methods	K4
CO3	Analyze the knowledge on suitability of furnishings and coverings for living room.	K4
CO4	Analyze the knowledge on suitability of various types of linens and its end uses	K4
CO5	Analyze the knowledge on suitable care & maintenance of home furnishing materials.	K4
CO6	Assess the varieties of home furnishing products and its end uses	K4

Pre Requisite :Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	M												S	M
CO2		S	M											
CO3	M	M											M	M
CO4		M	M										M	
CO5			M											
CO6			M										M	M

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1.Course Exit Survey

Course Content**INTRODUCTION****9 Hours**

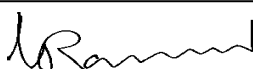
Definition & introduction to textile furnishings. Different type of furnishing materials –woven and nonwoven. Factors affecting selection of home furnishing – fiber, yarn, fabric & finishes. Finishes for home furnishings – soil repellency, mosquito repellency, flame proofing, dust repellency, anti microbial finish.

WINDOW TREATMENT**9 Hours**

Doors and Windows - types. Window treatment –exterior, interior - hard and soft. Curtains and Draperies – types, parts, factors for selection and construction, accessories used.

LIVING ROOM FURNISHING**4 Hours**

Living Room furnishings - sofa cover, cushion, cushion cover, bolster, bolster cover, teapoy cover. Wall coverings – types.

FLOOR COVERING**5 Hours**


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Floor covering – types – Hard floor covering, resilient floor coverings, and soft floor coverings -carpet, rugs, mats.

BED AND BATH LINEN

9 Hours

Bed linens– types– bed sheets, blankets, blanket covers, comforters, comforter covers, bed spreads, mattress and mattress covers, pads, pillows and pillow covers. Care and maintenance of bedlinen.

Bathlinen & its types- towel, mats. Care and maintenance of bathlinen.

KITCHEN LINEN

4 Hours

Kitchen linens – types - dish cloth, towels, fridge cover, fridge handle cover, mixie cover, and grinder cover, napkin, apron.

TABLE LINEN

5 Hours

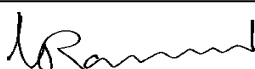
Table Linen – Types - tablemats, table cloth, hand towel, doilies, runners. Cleaning materials – wipes and mops. Care and maintenance of kitchen and table linen.

Theory: 45 Hours

Total: 45 Hours

REFERENCES

1. Jay Diamond and Ellen Diamond, “Fashion Apparel, Accessories, Home Furnishings”, PearsonPrenticeHall, New Jersey, 2007.
2. Hamlym, “Bed and Table linen”, Octopus Publishing Group Ltd, New York 2001.
3. David Holloway, “The Essential Book of Home Improvement Techniques”, Marshals Publications, London, 2000.
4. Emma Callery, “The Home Decorator’s Colour Source Book”, Apple Press Ltd, London, 2006.
5. Heather Luke, “Design and Make Cushions”, Silverdale Books Ltd, Leicester, 2001.
6. Hamlym, “Curtains and Blinds”, Octopus Publishing Group Ltd, New York, 2001.
7. Susie Johns, “A Cornucopia of Cushions”, Apple Press Ltd, London, 1997.
8. James Merrell, “Living with Decorative Textiles”, Thames and Hudson Ltd, London, 1995.
9. Caroline Lebea, “Fabrics the Decorative Art of Textiles”, Thames and Hudson Ltd, London, 1994



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U18FTE0012 GARMENT TRIMS AND ACCESSORIES

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Apply knowledge on fundamentals of garment trims and accessories	K3
CO2	Outline the types and characteristics of primary and secondary trims	K4
CO3	Explain the package forms and shipping equipments	K3
CO4	Analyze the suitability of the packaging material	K4
CO5	Explain the testing Standards and certification process for garment trims and accessories	K3
CO6	Analyze the Performance properties of garment components and trims	K4

Pre Requisite:

U18FTT3003 Pattern Making and Adaptation

U18FTI4203 Apparel Design and Development

CO/PO Mapping														
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S					S	S							S
CO2		S				S	S							M
CO3		S	M			S	S						M	
CO4	M					S	S						M	S
CO5	S	S				S	S						S	S
CO6			S			S	S	M					S	S

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

Course Content
INTRODUCTION

9 Hours

Meaning, importance, classification, Factors affecting selection of raw materials, types of finishes for trims and accessories, importance of certification of trims and accessories in exports

PRIMARY TRIMS

9 Hours

Linings-fibre types and properties- factors affecting selection of linings- making up and testing of linings – lining component patterns;

Interlinings- fusible and non fusible – woven and non woven – types - chemical bonded, thermal bonded, needle bonded, spun bonded, embroidery backing, water soluble fabrics, Tricot lining, Coat lining, Mobilone tape, Felts. Wadding or batting – types and characteristics

SECONDARY TRIMS

9 Hours

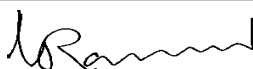
Closures (buttons, hooks and eyes, hooks and bars, press studs, rivets, zips, ,velcro), shoulder pads, tapes; Ornamental Trims- laces, braids , elastic, fringes, tassels, appliqués, transfer prints, tie cords, labels and motifs

PACKING AND FINISHING ACCESSORIES

9 Hours

Types of package forms

– merchandise packaging



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and shipping packaging, Types of packaging materials – raw materials - Poly bags, collar accessories and backing boards, Quality specification for packaging materials – fitness certification for end use and bursting strength, Packing and shipping equipment – folding equipment, container packing equipment and conveyors.

PERFORMANCE AND TESTING

9 Hours

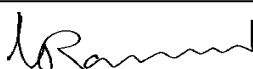
Performance properties of components and trims – Standards and certification for trims and accessories- Buttons, Snap Fasteners, Zipper, Elastics. Safety tests Attached components / trims / Motifs / prints -Durability to washing, Tests for nickel free and lead free trims and accessories.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Harold Carr and Barbara Latham- Technology of Clothing Manufacture– Blackwell Science Inc. USA., 2002
2. Jacob Solinger, “Apparel Production Handbook”, Reinhold Publications, 1998.
3. Gerry Cooklin – Garment Technology for Fashion Designers, Black well science Ltd. USA., 2011
4. Jarnow.J.A. and Judelle. B – Inside the fashion business, 2nd edition, 2002.
5. ASTM Standards - en.wikipedia.org/wiki/ASTM International ISO Standards- www.iso.org/iso/iso_catalogue.htm



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APPAREL MANAGEMENT



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U18FTE0013

FASHION MARKETING

Course Outcomes

L	T	P	J	C
3	0	0	0	3

After successful completion of this course, the students should be able to

CO1	Acquaint with the fashion marketing process and develop a fashion market.	K3
CO2	Understand fashion consumer psychology and the influence on decision making.	K2
CO3	Appreciate the purpose of research in fashion marketing	K3
CO4	Understand fashion forecasting and practice the same for a specific season.	K6
CO5	Understand marketing strategies and distribution of fashion services through retailing.	K3
CO6	Acquaint with communication techniques in fashion marketing and planning the same.	K3

Pre Requisite :

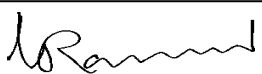
Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PSOs	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2
CO 1		M	S					M					M	S
CO 2						M							M	S
CO 3		M											M	M
CO 4					S				S				M	S
CO 5								M	M				S	M
CO 6										S	M		S	M

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course End Survey

Course Content


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INTRODUCTION TO FASHION MARKETING**9 Hours**

Definition of Fashion- Fashion marketing – Overview of Fashion Marketing Process - Development of Fashion market – Size, Structure – marketing environment - micro marketing, macro marketing environment – ethical issues in fashion marketing.

FASHION CONSUMER AND FASHION MARKETING RESEARCH**9 Hours**

Need for study of fashion buyer – decision-making by fashion consumers, psychological processes, sociological aspects of consumer behavior – organizational buyer.

Purpose of marketing research-research design and data sources– Sampling methods– probability sampling, non-probability sampling. Data sources, Primary data collection methods. Market Segmentation- Fashion marketing mix.

FASHION FORECASTING**9 Hours**

Definition of fashion forecasting, Types of forecasting – long term and short term, Process of fashion forecasting, qualitative methods (Delphi etc) and quantitative methods (exponential smoothing, ARIMA etc). Role of fashion forecasters, fashion forecasting packages – hard copy and soft copy packages – Trend stop, Trend union, WGSN. Forecasting Services/Agencies and its role in forecasting. Developing apparel designs and other specification for the upcoming season through fashion forecasting.

MARKETING STRATEGIES AND DISTRIBUTION OF FASHION SERVICES**9 Hours**

Marketing Strategy - Role of price decisions – internal and external factors influencing price decisions – pricing strategies for new products.

Distribution of Fashion services – importance of fashion retailing, trends in retailing – the ‘grey’ market – effectiveness of retail marketing

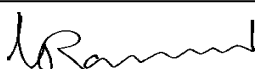
FASHION MARKETING COMMUNICATIONS AND PLANNING**9 Hours**

Fashion Marketing - advertising, Sales promotion, Public relations, celebrity endorsement and sponsorship, personal selling, visual merchandising, visual marketing, ethics in marketing communication.

Fashion Marketing Planning – objectives and planning process – marketing audits and SWOT analysis – implementation and organizational issues in fashion marketing plan.

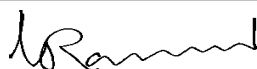
Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Mike Easey, “Fashion Marketing”, Blackwell Science, 2000.
2. Malcolm Barnard “Fashion as communication”, Routledge Taylor & Francis Group, 2002
3. Maurice J. Johnson and Evelyn C. Moore, “Apparel Product Development”, Prentice Hall Inc., 2001.
4. Smith, P. R. and Taylor, J., “Marketing Communications: An Integrated Approach”, Kogan Page, London, U.K. 2005.
5. Agins, T. “The end of Fashion; How Marketing Changed the Clothing Business Forever”, Perennial, 2000.



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6. Hines, T and Bruce, M. "Fashion Marketing-Contemporary Issues", CIM, 2001
7. George Belch, Michael A Belch, "Advertising Promotion: An Integrated Marketing Communication Perspective", Tata McGraw Hill, 2001.
8. John M Penrose, Robert W Rasberry, Robert J. Myers, "Advanced Business Communication", South Western Publication Company, 2001



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U18FTE0014 SOCIAL COMPLIANCE FOR APPAREL INDUSTRY**Course Outcomes**

L	T	P	J	C
3	0	0	0	3

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on scope and need of social compliance

CO2: Understand the compliance norms on labour and safety

CO3: Understand the compliance norms on Health and Environment

CO4: Understand the norms on wage compliance

CO5: Comprehend practice of ethical trading and international compliance

CO6: Identify and apply compliance norms for apparel industry

Pre-requisites: NIL

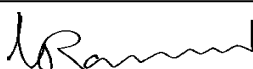
		CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak													
Cos			Programme Outcomes(POs)												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO1 1	PO 12	PS O1	PS O2	
CO1					M										
CO2					M					M					
CO3					M					M					
CO4		S								M					
CO5		S								M		M	M	M	
C06						S	S	S						S	

Course Assessment methods:

Direct	Indirect
1.Internal tests(I, II,), 2.Assignment, 3.End Semester Exam	1. Course end Survey

DEFINITION: SCOPE AND NEED OF SOCIAL COMPLIANCE:**9 Hours**

Social Compliance - concept, need, benefits for industry, workers, society. Social accountability and Corporate Social responsibility - scope and



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need. Social Compliance in supply chain management.

GENERAL NORMS ON LABOUR AND SAFETY:

12 Hours

Conventions on discrimination, forced labour, child labour- Direction and risk in the supply chain. ILO convention on child labour, worst Form of child labour, Hazardous child labour, Environment and climate, health and safety–safety norms and measures to be forced for safe working Environment.,workinghours-norms,remuneration-minimum wages Conventions on Acquired Immune Deficiency Syndrome (AIDS) and Gender.

HEALTH AND ENVIRONMENT COMPLIANCE:

8 Hours

Minimum age Convention, freedom of association,collectivebargaining, corruption and bribery–effect and risk in the supplychain. Global Reporting Initiatives(GRI)sustainability reporting guide line. Organization for EconomicsCo-operation andDevelopment(OECD) guide lines for multinationaldiscrimination.

WAGECOMPLIANCE:

9 Hours

Freedom of association, collective bargaining agreements (C87,C98–ILO) compensation–norms applicable in India. Working hours–code of conduct.

ETHICAL TRADING AND INTERNATIONAL COMPLIANCE:

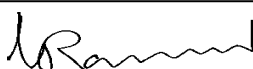
7 Hours

Ethical Trading Initiative (ETI). Basic code of labourpractice.WorldwideResponsibleApparel Production (WRAP)purposes, WRAP Principle,certification process, SA8000. National and international regulating organizations – OSHA, WRAP, GOTS, OEKO TEX. Corporate Social Responsibility (CSR) – mandatory requirements – benefits to company, labour and society.

Total: 45 Hours

REFERENCES

- 1 RajeshChhabara,“SocialAccountability”,AvasoftechPvt.Ltd.,2005
2. RebocakLeifziger, “SA 8000: The first decade”, GreechLeaf Publishers, May2009.
- 3.<http://www.ilo.org.in>.
- 4.<http://www.endchildlabor.com>
- 5.<http://www.labour.nic.in>
- 6.<http://www.unicef.org>
- 7.<http://www.indianchild.com>
- 8.<http://www.paycheck.in>
- 9.<http://www.sa-intl.org>.
- 10.<http://www.saasaccreditation.org>.



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U18FTE0015 GLOBAL MARKETING AND SOURCING STRATEGIES

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Acquire knowledge on drivers and factors influencing global marketing	K3
CO2	Analyze the process of global market management	K4
CO3	Analyze the sourcing strategies.	K4
CO4	Evaluate the elements of sourcing design.	K5
CO5	Evaluate the trends in growth of global markets	K5
CO6	Understand the role of developed and under developed countries in world trade	K2

Pre Requisite : Nil

CO/PO Mapping														
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO12	PSO 1	PSO 2
CO1		S	S	S		S	S	S		S		M	S	S
CO2		S	S		S					S	M	M	S	
CO3		S		S	S		S	S		S	M	M	S	S
CO4		S			S		S				M		S	S
CO5		M		S	S	S						M	S	
CO6		M		S					M	M			S	

Course Assessment methods:

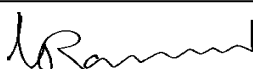
Direct	Indirect
1.Internal tests 2.Assignment 3.Group Presentation 4.End Semester Exam	1.Course Exit Survey

Course Content**GLOBAL MARKETING****9 Hours**

Introduction to Global Marketing – Drivers towards Globalization - Factors influencing global marketing – economic, social and cultural.Limitations to Global Marketing.Global Competitive analysis - competitive environment, country specific advantages, firm specific advantages.

GLOBAL MARKET MANAGEMENT**9 Hours**

Global customers - Global segmentation and positioning- market segments, global product positioning, positioning a new brand, positioning a global brand. Global Product and Services - Global product lines, services, service quality, globalization of services.Distribution strategies, advertising, promotion.Organizing for Global Marketing - Organizational structure, management systems, people and organizational culture.



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SOURCING STRATEGIES**9 Hours**

Principles of sourcing strategy - out sourcing. Sourcing goals and objectives. Source selection - contracts and incentives, supplier strategies. Sourcing data and reports.

SOURCING DESIGN**9 Hours**

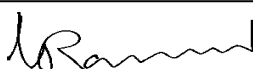
Sourcing design elements. Risks and rewards of multiple sourcing. Capacity constraints and pricing in sourcing markets. LIC selection and incentives for innovation - Yard stick contracts. Case studies in sourcing.

FUTURE OF GLOBAL MARKETING**9 Hours**

Growth of markets – developed and under developed countries. Issue of Trade cycles. Rise of under developed and developing countries. Global marketing case studies.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Warren.J.Keegan, “Global Marketing Management”, 7th Edition, Prentice Hall of India, New Delhi, 2008.
1. Johany. K.Johansson, “Global Marketing”, Second Edition, Irwin McGraw Hill, 1995.
2. Subash C, Jain, “International Marketing”, Sixth Asian books (P) Ltd, South Western Thomson learning, 1993.
3. Cateora, “Organisations Structures”, Tenth Edition, McGraw Hill, 1997.
4. SudhiSheshadri “Sourcing Strategy”, Principles, Policy and Design , Springer, 2005.



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U18FTE0016 LOGISTICS AND SUPPLY CHAIN MANAGEMENT

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Discuss the importance of logistics and supply chain management and its value for competitive advantage of the firm.	K2
CO2	Analyze and interpret the supply chain, the role of its actors and its logistics flows and function	K4
CO3	Apply the ability to develop and manage Supply Chain	K3
CO4	Assess logistics and supply chain management required by garment industry	K5
CO5	Understand the concept of distribution network planning	K2
CO6	Identify new emerging trends SCM and apply suitably in Apparel Industry	K3

Pre-Requisites:

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PSOs	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2
CO1	M									M			M	
CO2	M	M								M	S		M	
CO3	M	S								M	S		M	
CO4	S													
CO5	M					M					M			
CO6					M	M	M		S		M	M		M

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

Course Content**OVERVIEW OF SCM AND LOGISTICS****9 Hours**

Definition of logistics and supply chain management, Evolution of logistics, logistics and competitive performance, physical distribution management. Principles of supply chain management– functions of supply chain management, Customer focus in supply chain management– customer service, Efficient Consumer Response(ECR).

DESIGN AND MANAGEMENT OF SUPPLY CHAIN**9 Hours**

Phases of supply chain management, in bound and out bound logistics–suppliers to manufacturers, manufacturers to consumers. Logistics management–design and management, integrated supply



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chain, pull and push strategy, lean and agile supply chain, decoupling point, Aggregate forecasting and risk pooling, cross-docking and circular supply chain . Demand management-demand forecasting and shaping. Bullwicket effect-Influencing factors, control measures.

GLOBAL SUPPLY CHAIN MANAGEMENT

9 Hours

Organizing for global markets– World Class Supply Chain Management (WCSCM). Stages in global SCM. International logistics. Worldclass Logistics Management (WCLM)

IT ENABLED SUPPLY CHAIN MANAGEMENT

9 Hours

Information technology in the integrated supply chain, importance, information requirements and applications. Intelligence information system – material resource planning, manufacturing resource planning, enterprise resource planning. IT packages– SAP R/3 ERP, BAAN ERP solutions, i2 Rhythm, selection of suitable package.

Cost and Performance Measurement In Supply Chain Management: Cost drivers, activity based costing, logistics cost, customer profitability analysis. Benchmarking– importance, role and methodology, challenges in implementation. Performance measurement systems.

DISTRIBUTION NETWORK PLANNING

9 Hours

Transportation mix– warehousing, transportation cost, transportation decision and futuristic direction in transportation. Location strategy– plant location, distribution problem, warehouse location, retail facility location.

EMERGING TRENDS IN SUPPLY CHAIN MANAGEMENT:

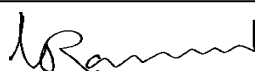
Collaboration strategies, Vendor Managed Inventory (VMI), third and fourth party logistics, green supply chain, reverse logistics..

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Douglas M. Lambert, James R. Stock and Lisa M. Ellram, “Fundamentals of Logistics Management”, Columbia Boblin Media Corp., 1998.
2. Donald J. Bowersox and Davis J. Closs, “Logistics Management – The Integrated Supply Chain Process”, Columbia Boblin Media Corp., 2006.
3. Sunil Chopra and Peter Meindal, “Supply Chain Management: Strategy, Planning and Operations”, Prentice Hall Inc., 2001.
4. Benjamin S. Blanchard, “Logistics Engineering and Management”, McGraw Hill, Inc. New York, 2002.
5. Martin Christopher, “Chap. 7 of Logistics and Supply Chain Management– Strategies for reducing cost and improving service”, Second Edition. McGraw Hill Inc., New York 1992.



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U18FTE0017 APPAREL EXPORT MANAGEMENT

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Demonstrate knowledge on need for exports and export trade statistics.	K3
CO2	Illustrate the steps involved in setting up export business and export correspondence and negotiation	K4
CO3	Examine the EXIM policy and export promotion schemes	K4
CO4	Research the sources for export finance and analyze the export payment terms	K4
CO5	Demonstrate knowledge in export documentation and procedures	K3
CO6	Evaluate the requirements of export negotiation and different incentive options on exports.	K5

Pre Requisite : NIL

CO/PO Mapping																
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak																
COs	Programme Outcomes(POs)															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2		
CO1		M			S					S		M	S			
CO2		M			S			M	M	S	S		S	M		
CO3					S					S			S			
CO4		M			S					S	S		S			
CO5		M			S				M	S	S	M	S	M		
CO6					S			M	M	S	S	M	S	M		

Course Assessment methods:

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation 4. End Semester Exam	1. Course Exit Survey

INTRODUCTION**9 Hours**

Basics of international trade and its significance. Role of WTO and regional economic groups in international trade. International trade statistics of textiles and apparel. Prospects for Indian apparel exports and SWOT analysis.

EXPORT BUSINESS**9 Hours**

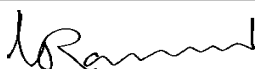
Setting up of export business - export marketing organisation, product planning for export markets, export pricing and costing, International Commercial(Inco) Terms. Export correspondence -negotiations for export business.

EXIMPOLICY**9 Hours**

Highlights of Exim Policy 2008–2013. Various schemes for export promotion-duty drawback, duty exemption, duty remission. EOU, free trade zones, special economic zones, market access initiative, market development assistance, brand promotion, trading house, export houses, ware housing zones

EXPORTFINANCE:**9 Hours**

Basic concepts of foreign exchange – foreign exchange risk management - Forfeiting and Factoring. Methods of International Payment Settlement - International Commercial Terms -



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Letter of Credit - Exchange Control Regulations for imports and exports - Export Financing - Pre-Shipment finance - Post Shipment Finance - EXIM Bank of India - ECGC - Demand Guarantees and Standby Letter of Credit

EXPORT PROCEDURE AND DOCUMENTATION

9 Hours

Export Procedure, Inspection and Customs Clearance procedures. Shipping formalities. Export Documentation - types - transport documents, commercial documents, and regulatory documents. Marine Insurance General Information on Shipping - Types of Containers - Containerization - Air Transportation. Export Packaging - Introduction - Mechanical tests - Climatic tests - International Care labeling.

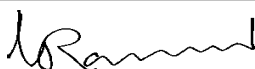
Negotiation of documents and realization of export proceeds, procedure for obtaining various export incentives.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Balagopal TAS, "Export Marketing", Himalayan Publishing House, 2005.
2. Francis Cherunilam, 'International Trade and Export Management' HPH, 2004
3. Govt. of India's, "Foreign Trade Policy", 2007.
4. D.C. Kapoor, Export Management, Vikas Publications, 2009
5. Palle Krishna Rao, "WTO-Text and Cases-Excel Series", Excel Books 2005.
6. Hearle JWS, Hines Tand SuhM, "Global Marketing of Textiles", Journal of The Textile Institute (Special Issue) 1997.
7. "Globalization: Technological, Economic and Environmental Imperatives", The Textile Institute, 1995.
8. P.K. Khurana, "Export Management", Galgotia Publishing Company, 2003.



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U18FTE0018 ENTREPRENEURSHIP DEVELOPMENT

L	T	P	J	C
3	0	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Recognize the factors affecting Entrepreneurship growth and their problems	K ₂
CO2	Outline the importance of Entrepreneurial Development programmes.	K ₂
CO3	Describe the projects identification, selection and formulation procedure	K ₂
CO4	Indicate the role of government in entrepreneurial development	K ₂
CO5	Underline the basis of intellectual property rights in India.	K ₂
CO6	Recognize the factors in the management of new enterprises	K ₂

Pre Requisite :Nil

COs	CO/PO Mapping													
	(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak													
	Programme Outcomes(POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	S	S	M							S			S	
CO2		S											S	
CO3	M	S	S							S			S	
CO4	M	M								S			S	
CO5	S	M											S	
CO6	M	S	S							S			S	S

Course Assessment methods

Direct	Indirect
4. Internal tests 5. Assignment 6. Group Presentation 7. End Semester Exam	2. Course Exit Survey

Course Content**ENTREPRENEUR****9 Hours**

Entrepreneurship and economic development – its importance –Entrepreneur Qualities, nature, types, traits of entrepreneur Similarities and differences between entrepreneur and manager– factors affecting entrepreneurship growth- Problems of entrepreneurs-women entrepreneurs.

ENTREPRENEURIAL PROMOTION**9 Hours**

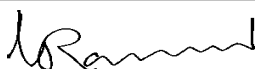
Motivation: Theories and factors of entrepreneurial motivation – Entrepreneurial development programmes– need, objectives, phases and evaluation- Training and developing- occupational mobility-factors in mobility- Role of consultancy organizations in promoting entrepreneurs.

PROJECT MANAGEMENT**9 Hours**

Project identification and selection – project formulation–Report preparation– evaluation: marketing-technical and financial- Steps and formalities to be followed in starting a new small scale enterprise

MANAGEMENT OF NEW ENTERPRISES

Financing of enterprise-various forms ownership of business- knowledge on various forms of taxation by government .Income tax Excise duty, TIN, GST Sales Tax, Customs duty,



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Surcharge, registration and licensing fees- growth strategies- Corporate social responsibility- causes and prevention of sickness in industry

INSTITUTIONAL SUPPORT

9 Hours

Role of government in entrepreneurial development- MSME act2006 –startup India-stand up India- make in India- District Industry Centre and its role–Government incentives–financial and non-financial for startups and MSME- role of Industry associations and trade promotion councils

INTELLECTUAL PROPERTY RIGHTS

9 Hours

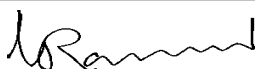
Intellectual property rights laws in India -patent-trademarks–industrial design-copy rights-need and benefits of registration IP-WIPO and its activities-TRIPS Agreement-Government support to MSME for registration of IP

Theory: 45 Hours

Total: 45 Hours

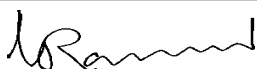
REFERENCES

1. Khanka S.S., “Entrepreneurial Development” S Chand and Company Private Limited., 2012 ISBN: 81-219-1801-4.
2. Vasanth Desai “Dynamics of Entrepreneurial Development and Management” Himalaya Publishing House 2010 ISBN: 9788183184113
3. SatishTaneja, “EntrepreneursDevelopment” Himalaya Publishing House, 2010. ISBN: 9788184886832
4. Dr. R. Radhakrishnan and Dr. S. Balasubramanian, “Intellectual Property Rights Text and Case” Excel Books – 2008, ISBN: 978-81-7446-609-9
5. www.indianbusiness.nic.in



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ONE CREDIT COURSES



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U18FTC0001 COMPUTER AIDED TEXTILE AND APPAREL DESIGNING**Course Outcomes**

After successful completion of this course, the students should be able to

CO1	Practice creativity and innovation	K6
CO2	Develop designs as per market needs and current trends	K6
CO3	Develop catalogues to market the developed products	K6

Pre Requisite : Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
CO s	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PS O 1	PS O 2
CO 1			S											
CO 2			S							S			S	
CO 3		S	S		S					S			S	

Course Assessment methods:

Direct	Indirect
1. Internal test	Course exit survey

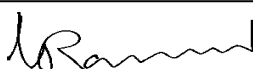
EXPERIMENTS:

1.	Design mood boards and color boards for specific markets based on fashion forecasts
2.	Develop print fabric simulations
3.	Develop woven fabric simulations
4.	Develop knitted fabric simulations
5.	Develop surface ornamentation simulations
6.	Develop a collection of garments
7.	Develop an E-catalogue of the collections.

Total: 15 Hours

REFERENCES

1. Fashion Designing Laboratory – I Lab Manual
2. Fashion Designing Laboratory – II Lab Manual
3. Lectra Manual



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U18FTC0002

DRAPING TECHNIQUES

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Appraise, select and evaluate suitable fabric for the required design aspects	K4
CO2	Explore the different draping techniques for the development of skirts, blouses and bifurcated garments	K5
CO3	Design and develop three dimensional garments by draping techniques for designers and industry	K6

Pre Requisite : Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
CO s	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO 1		S	S	M		M				M			S	M
CO 2		S	S	M		M				M			S	M
CO 3		S	S	M					S	S	S	S	S	W

Course Assessment methods:

Direct	Indirect
1. Internal test	Course exit survey

EXPERIMENTS

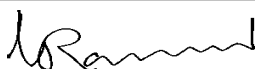
1.	Effect of fabric on forms for skirts Type of fabric :Wovens, knits; nonwovens, non textile (Leather, paper, fusion of materials etc.) Weight of fabric :light weight, medium weight and heavy weight
2.	Effect of fabric on forms for skirts Types of Silhouettes : bell & balloon, circle & triangle
3.	Intermediate Draping : Skirts- kilt, pegged, dirndl, yoke with flare & flounces
4.	Intermediate Draping : Blouses – Bustiers, Peasant, Gibson Girl with incorporation of collar and sleeve by draping technique
5.	Intermediate Draping : Pants -Harem, Hakama, wide leg pants
6.	Advanced Draping : Asymmetrical and Biased drapes, and
7.	Advanced Draping: Gowns -Shift & Empire

Practical : 15 Hours

Total: 15 Hours

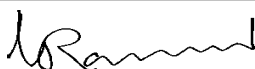
REFERENCES

1. Aldrich W., Fabric, Form and Flat Pattern Cutting, Blackwell Science Limited, London, 1996.



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2. Crawford A.A., The Art of Fashion Draping, Om Books International, New Delhi, 2005.
3. Kiisel K., Draping -the complete Course, Laurence King Publishers, 2013



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U18FTC0003 SEWING MACHINERY DYNAMICS**Course Outcomes**

After successful completion of this course, the students should be able to

CO1	Apply knowledge to determine the impact of process parameters on garment sewing	K3
CO2	Acquire knowledge on sewing dynamics	K1
CO3	Analyze the impact of needle heating on sewing performance	K4

Pre Requisite: Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
Cos	Programme Outcomes(POs)												PSOs	
	P O1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO1		S											S	
CO2			S											
CO3													S	

Course Assessment methods:

Direct	Indirect
1. Internal test	Course exit survey

PROCESS PARAMETERS IN GARMENT SEWING**7****Hours**

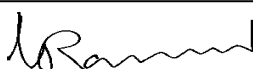
The impact of operation type and technological equipment on process parameters of garment sewing- determining total time on the basis of process parameter measuring- determining total time using video cameras- measuring system and equipment

SEWING DYNAMICS**8****Hours**

Influence of machine and material parameters on the stitch length - effect of thread structure on tension peaks during lock stitch sewing- needle penetration force – impact of needle heat on sewing performance. Measurement of needle heat- Measuring sewing machine forces at high speeds

Total: 15 hours**REFERENCES**

1. Harold Carr and Barbara Latham, "The Technology of Clothing Manufacture", Om Book Service, 2002.
2. Shaeffer Claire, "Sewing for the Apparel Industry", Prentice Hall, New Jersey, 2001.
3. Singer, "Sewing Lingerie", Cy De Cose Incorporated, 1991.
4. Laing R.M. and Webster J, "Stitches and Seams", The Textile Institute, Manchester, 1999
5. Technical Advisory Committee of AAMA, "A New Look at Apparel Mechanization", 1978.
6. Jacob Solinger, "Apparel Production Handbook", Reinhold Publications, 1998



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U18FTC0004 DEVELOPMENTS IN SEWING MACHINERY**Course Outcomes**

After successful completion of this course, the students should be able to

CO1	Acquire knowledge in developments in basic sewing machines	K1
CO2	List different types of special sewing machines required for making different garments	K1
CO3	Describe the developments in CNC sewing machines	K2

Pre Requisite: Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
Cos	Programme Outcomes(POs)												PEOs	
	P O 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PEO 1	PEO 2
CO1	S													
CO2		S												
CO3					S									

Course Assessment methods:

Direct	Indirect
1. Internal test	Course exit survey

BASIC SEWING MACHINES:**5 Hours**

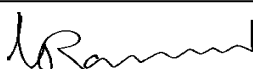
Developments in basic sewing machines- single needle lock stitch machine – bobbin winding- work aids and attachments- automatic trimming

SPECIAL SEWING MACHINES:**10 Hours**

Developments in special sewing machines – over lock machine- flat lock machine – feed off the arm- button sewing machine, button hole making machine, bar tack machine, safety stitching, blind stitching, double needle , zigzag machines, CNC sewing machines.

Theory : 15 Hours**Total: 15 Hours****REFERENCES**

1. Harold Carr and Barbara Latham, "The Technology of Clothing Manufacture", Om Book Service, 2002.
2. Shaeffer Claire, "Sewing for the Apparel Industry", Prentice Hall, New Jersey, 2001.
3. Singer, "Sewing Lingerie", Cy De Cose Incorporated, 1991.
4. Laing R.M. and Webster J, "Stitches and Seams", The Textile Institute, Manchester, 1999
5. Technical Advisory Committee of AAMA, "A New Look at Apparel Mechanization", 1978.
6. Jacob Solinger, "Apparel Production Handbook", Reinhold Publications, 1998.



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U18FTC0005**NEW TRENDS IN PRINTING****Course Outcomes****After successful completion of this course, the students should be able to**

CO1	Acquire knowledge on new printing techniques	K1
CO2	Ability to explain various printing methods, machines and styles for fabric and garment	K2
CO3	Create innovations in the field of printing	K6

Pre Requisite : Nil

		CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
Cos			Programme Outcomes(POs)											
	PO 1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO1		S												
CO2		M		S										
CO3			S		S									S

Course Assessment methods:

Direct	Indirect
1. Internal test	Course exit survey

DIGITAL PRINTING**3 Hours**

Different types, Substrate preparation, Ink Formulation, Digital colour management, Industrial production printers.

TRENDS IN PRINTING**9 Hours**

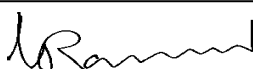
Ajrak, Akola, Brushprint, Bagru, Balaotra, 3D print, Dewdrop, Dabu print Flock, Foil, Fluorescent printing, Gold, Jawata, Khari, Pigment, Pearl, Puff, Rubber, Rapid print, Neptol, Modern abstract prints

NEW TRENDS**3 Hours**

Trends in Garment printing, Carpet and Home textile printing

Total: 15 Hours**REFERENCES**

1. Edited by H.Ujje "Digital printing of Textiles", Wood head Publishing Limited 2006
2. L.W.C.Miles "Textile Printing" Society of Dyers & Colorists; 2nd revised edition, January 2003
3. R. S. Prayag, Technology Textile Printing – Noyes Data Corporation, 1989



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U18FTC0006 APPLICATION OF SIX SIGMA IN APPAREL MANUFACTURE

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Apply the concept of Six Sigma and its application to evaluate and control a process	K3
CO2	Analyze various metrics used in designing, implementing and evaluating Six Sigma process	K4
CO3	Assess implementation of six sigma concept in apparel industry	K5

Pre Requisite : Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P O 10	PO1 1	PO1 2	PS O 1	PS O 2
CO 1	S		M	M	M				M	M			M	
CO 2	S	S	M	M	M				M	M	M		M	
CO 3			M		M				M	M	M		M	M

Course Assessment methods:

Direct	Indirect
1. Internal test	Course exit survey

DESIGN FOR SIX SIGMA (DFSS):

6 Hours

Six Sigma Basics: Overview and Implementation. Process measurement, Process analysis, Process improvement (Six Sigma and Lean concept) and Process control.

DESIGN FOR SIX SIGMA AND IMPLEMENTATION:

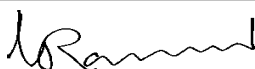
9 Hours

Design for Six Sigma, Six Sigma implementation. Six Sigma Metrics: DPU, DPO, DPMO, Sigma levels, Yield, First Time Yield, Overall Yield, Throughput Yield, Rolled Throughput Yield, Normalized Yield Process Capability Indices: Cp, Cpk, Cpm, Cpkm. Dealing with non-normality through transformations.

Total: 15 Hours

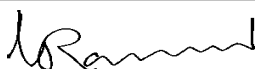
REFERENCES

1. [Chowdhury](#), Subir, "Design for Six Sigma", Dearborn Trade, 2002.
2. [Chowdhury](#), Subir, "The Power of Six Sigma", Pearson Education (Singapore) Pvt. Ltd., 2001.
3. Creveling C M; Sluisky J L; Antis, Jr. D, "Design for Six Sigma Technology and Product Development", Pearson Education (Singapore) Pvt. Ltd., 2004.



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4. Truscott William T, "Six Sigma Continual Improvement for Business: A Practical Guide", Elsevier, 2009.



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U18FTC0007 WASTE ELIMINATION AND VALUE STREAM MAPPING IN APPAREL INDUSTRY

Course Outcomes

After successful completion of this course, the students should be able to

CO1	Understand Lean concept in manufacturing perspective	K2
CO2	Apply concept of Lean Wastes and understand its impact on cost of poor quality in the context of apparel manufacturing industry	K4
CO3	Apply the Value Stream Mapping tool in elimination of Lean Wastes	K4

Pre-requisite: Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PO1 2	PS O 1	PS O 2
CO 1						M	M			M			M	
CO 2		M				M	M			M			S	
CO 3		M			M	M	M			M	M	M	S	M

Course Assessment methods:

Direct	Indirect
1. Internal test	Course exit survey

INTRODUCTION

3 Hours

Introduction to Lean concept – Comparison of Lean practice and traditional business practices - Lean practices as distinguished from TQM, Management Systems of QMS, EMS, OSHAS and TPM.

LEAN WASTES

8 Hours

8 Wastages - over production, higher inventory, waiting time, unnecessary conveyance and motion of materials, over processing, rework- repairs - rejections, customer returns, wastage of people talents. profit leakages due to wastages

Cost of Poor Quality – Cost of Quality – calculation of Cost of Poor Quality. 5 S – Seiri, Seiton, Seisō, Seiketsu, Shitsuke – house keeping practices for cleaner production.

VALUE STREAM MAPPING

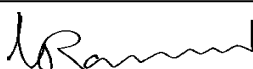
4 Hours

Identifying non – value activities in apparel manufacture – analysis and eliminating non – value activities through Value Stream Mapping (VSM)

Total: 15 Hours

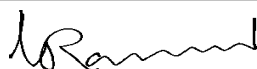
REFERENCES

1. Gopalakrishnan N, Simplified Lean Manufacture: Elements, Rules, Tools and Implementation, Prentice Hall of India Learning Pvt. Ltd., 2010
2. Hobbs Dennis P, "Lean Manufacturing Implementation: A Complete Execution Manual for Any Size Manufacturer", Cengage Learning India Private Ltd, NewDelhi, 2009.



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3. Rajmanohar T P, "Lean Product Development: Concept and Models", ICFAI Press, 2009.
 4. Desai, Aruna, "Lean manufacturing: Perspectives and Applications", ICFAI Press, 2008.
- Rajmanohar T P, "Cost of Poor Quality: Concept and Applications", ICFAI Press, 2008.



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U18FTC0008 CERTIFICATION PROCEDURES FOR PRODUCT AND PROCESS IN APPAREL INDUSTRY

Course Outcomes

After successful completion of this course, the students should be able

CO1	Understand the different requirements of various product certification processes in Apparel Industry.	K2
CO2	Understand the different requirements of various process certification processes in Apparel Industry.	K2
CO3	Apply and follow certification procedures for health, safety and environment protection.	K3

Pre-Requisites:NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P O 10	PO1 1	PO1 2	PS O 1	PS O 2
CO1					M								S	
CO2		S			M					M			S	
CO3				S	M			S		M	S	M		S

Course Assessment methods

Direct	Indirect
1. Internal tests	1. Course Exit Survey

PROCESS CERTIFICATION:

7 Hours

Cleaner Technology Production (CTP) - Occupational Health and Safety Assessment Specifications (OHSAS) –Worldwide Responsible For Apparel Production (WRAP) - Code of Vendor Conduct.

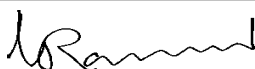
Global Sourcing and Operating Guidelines - Country Assessment Guidelines - Health and Safety Conditions , Human Rights Environment, Legal System, Political, Economic and Social Environment. Business Partner Terms of Engagement (TOE) - Ethical Standards, Legal Requirements, Environmental Requirements, Environmental Philosophy and Guiding Principles. Community Involvement, Employment Standards - Evaluation and Compliance.

PRODUCT CERTIFICATION:

8 Hours

ECO-Labeling - Oeko-Tex 100, EU Eco-Label for Textiles. Care Labelling - Sun protective labelling - Fibre content labeling - Country of origin labeling - Product Safety Standards (Children's Nightwear and Limited Daywear Having Reduced Fire Hazard) Regulations, Accessories on infants apparel.

UPF Rated certificate, certification for Fabrics, accessories and trims for children's nightwear and other daywear. Mandatory fabric test certification - Fibre Analysis - (Composition / Fibre Content) Construction, Yarn Count, Dimensional Stability Shrinkage, Spiralilty - Tensile



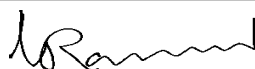
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Strength - Tear Strength - Colour Fastness, Seam Slippage, Pilling, Stretch & Recovery for fabric with elastane - Water Repellancy, Flammability, Water Absorbency/Wicking. Product Safety Certification - Drawcords / ties, Elastic, Zippers, Broken Needle Policy, Pins Policy, Shipment certification.

Total: 15 Hours

REFERENCES

1. 'Guidebook for Export to Japan' Japan External Trade Organization (JETRO). 2011
2. New CPSC Testing and Certification Requirements, 2012 - www.intertek.com
3. WRAP – Production facility handbook- www.wrapcompliance.org
4. Code of Vendor Conduct, Gap Inc



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U18FTC0009 STATISTICAL ANALYSIS IN THE APPAREL INDUSTRY**Course Outcomes**

After successful completion of this course, the students should be able to

CO1	Develop knowledge on basic principles of statistical design of experiments	K4
CO2	Apply knowledge in collecting experimental data and entry of data in software according to given procedure	K3
CO3	Experiment the data using the appropriate statistical tool and develop relevant models for analysis and interpretation	K4

Pre Requisite :Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
COs	Programme Outcomes(POs)												PSOs	
	P O 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO1	S			S										
CO2				S						S			S	
CO3		S		S	S								S	

Course Assessment methods:

Direct	Indirect
1. Internal tests	1. Course Exit Survey

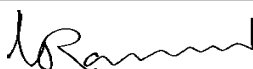
EXPERIMENTS:

1.	Data Collection and Processing of Data
2.	Frequency Distribution-Graphical Representation
3.	Calculation of mean, variance, Standard deviation and CV
4.	Probability distributions
5.	Testing of hypothesis-t-test, F-test
6.	Control Charts
7.	ANOVA
8.	Correlation
9.	Regression
10.	Chi-square test

Total: 15 Hours

REFERENCES

1. Montgomery D C Design and Analysis of Experiments, John Wiley & Sons,2004
2. Kothari C P Research Methodology-Methods and Techniques, Mishra Prakeshan 2000
3. Minitab-Software manual
4. SPSS software manual



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U18FTC0010 FLAT SKETCH AND DESIGN SHEET DEVELOPMENT**Course Outcomes**

After successful completion of this course, the students should be able to

CO 1	Develop a design sketch and other components according to seasonal collection	K6
CO 2	Develop flat sketch for the given design	K6

Pre Requisite: Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
CO	Programme Outcomes (PO's)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO 1		S	S		S			S		S				
CO 2					S					S				

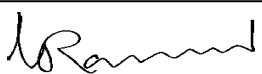
Course Assessment methods:

DIRECT	INDIRECT
Internal test	Course exit survey

EXPERIMENTS:

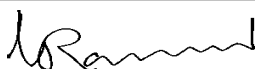
1.	Develop a design sketch with reference to the given seasonal collection
2.	Develop flat sketch for the chosen design
3.	Develop fabric swatch and show its different color options
4.	Develop an Artwork specification
5	Develop a digital trim card

Total: 15 Hours


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REFERENCES

1. Fashion and Textile Design with Photoshop and Illustrator – Professional Creative practice, Robert Hume, Bloomsbury, 2016.
2. Adobe Illustrator for fashion design, 2nd Edition, Susan M Lazear, Pearson Publications. 2012.
3. Fashion designer's handbook for Adobe Illustrator, 2nd edition, Marianne Centner, Frances Vereker, John Wiley and Sons, 2011.



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U18FTC0011 SOURCING SUSTAINABLE FASHION**Course Outcomes**

After successful completion of this course, the students should be able to

CO 1	Develop a plan for testing fabric according to sustainability protocol of buyer manual	K6
CO 2	Appraise the challenges faced in sourcing sustainable materials	K5

Pre Requisite: Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
CO	Programme Outcomes (PO's)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2
CO1		S	S		S			S		S				
CO2			M		S			S		S				

Course Assessment methods:

DIRECT	INDIRECT
Internal test	Course exit survey

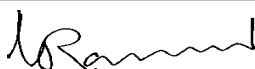
EXPERIMENTS:

1.	Develop a sourcing plan for procuring sustainable materials
2.	Determine the supply chain bottle necks in procuring sustainable materials.
3.	Develop a plan for testing fabric according to sustainability protocol of Buyer manual
4.	Appraise the sustainable fashion strategies adopted by brands like Mud jeans and Patagonia.
5.	Develop a model plan for circular fashion relevant to product: Knitted T shirt

Total: 15 Hours

REFERENCES

1. Peggy Blum, Circular Fashion: Making the Fashion industry sustainable, Orion Publishing, 2021.
2. KirsiNiinimaki, Sustainable fashion in a Circular Economy, 2nd edition, Aalto-yliopisto, 2019.
3. Elizabeth L. Cline, The Conscious Closet: The Revolutionary Guide to Looking Good While Doing Good, Illustrated edition, E P Dutton & Co Inc, 2019.
4. EsbenRahbekGjerdrum Pedersen & Kirsti Reitan Andersen, A Global expert study on sustainable fashion, Project report, Mistra Future Fashion, Copenhagen Business School, 2013.



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U18FTC0012 LEATHER GARMENTS**Course Outcomes**

After successful completion of this course, the students should be able to

CO 1	List operational sequence in leather garment production	K1
CO 2	Develop a design sketch for simple leather garments and accessories	K6

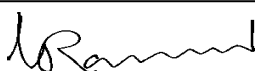
Pre Requisite: Nil

CO/PO Mapping														
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
CO	Programme Outcomes (PO's)													
	P O 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO 1		S	S				M	S						
CO 2	M		S				M	M		S				S

Course Assessment methods:

DIRECT	INDIRECT
Internal test	Course exit survey

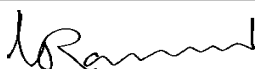
Different Types of Leathers and their properties. Grading and assorting of leathers for leather garments. Classification of leather garment based on material design usage and fashion. Accessories for leather garments; Various types of fasteners, fittings, and other accessories. Process flow for different types of leather garments, Machineries used for leather garments manufacture. Nomenclature used for component identification in various leather garments – Wallet, hand bags, Executive bags etc. operational sequences in leather garments production



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Total: 15 Hours**REFERENCES**

1. Dutta.S S, “An Introduction to the Principles of Leather Manufacture”, Fourth Edition, Indian Leather Technologists Association, Calcutta, 2002.
2. Sandy Scrivano,”Sewing with Leather & Suede”, Lark Books, 2002.
3. Thomas C,Thorstensen,”Practical Leather Technology”, Krieger Publishing Company, 2001.
Mary Maguire, “Leather Work”, Lawrence Publication House, 2000



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U18FTC0013 NATURAL DYES**Course Outcomes**

After successful completion of this course, the students should be able to

CO 1	Classify natural dyes	K2
CO 2	Select suitable mordents based on type of natural dye	K3

Pre Requisite: Nil

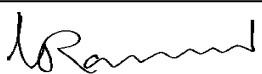
CO/PO Mapping														
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
CO	Programme Outcomes (PO's)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO 1			S	S		S	S	S		S				S
CO 2			M				S	S		S				S

Course Assessment methods:

DIRECT	INDIRECT
Internal test	Course exit survey

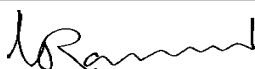
Classification of Natural dyes – By structure and by color. Basics of Natural Dyeing, Methods of Extraction of natural dyes Dyeing application of each dye on Cotton, Silk and Wool with fastness properties, CIE Lab values and shade card, Assessment of Eco friendliness of Naturally dyed fabrics, Description of the Newer Natural Dye sources, Separation, Structure, Innovative Dyeing and Application using ecofriendly mordants

Total: 15 Hours


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REFERENCES

1. The art and science of natural dyes principles, experiments and results by Joy Boutrup and Catharine Ellis, 2014.
2. Natural dyes for textiles by Padma S Vankar, Wood head publishing, 2017.
3. Hand book of natural dyes for industrial applications by Padma S Vankar, NIIR project consultancy services, 2016.



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U18FTC0014 INTRODUCTION TO INDUSTRY 4.0**Course Outcomes**

After successful completion of this course, the students should be able to

CO 1	Understand the basic concepts of Industry 4.0	K2
CO 2	Outline the features of Artificial Intelligence	K2

Pre Requisite: Nil

CO/PO Mapping														
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
CO	Programme Outcomes (PO's)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO 1			S		S		M							
CO 2					S		M							

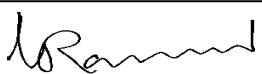
Course Assessment methods:

DIRECT	INDIRECT
Internal test	Course exit survey

Industry 4.0: Need – Reason for Adopting Industry 4.0 - Definition – Goals and Design Principles - Technologies of Industry 4.0 – Big Data – Artificial Intelligence (AI) – Industrial Internet of Things - Cyber Security – Cloud – Augmented Reality.

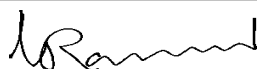
Artificial Intelligence (AI) – History of AI - Foundations of AI -The AI - Environment - Societal Influences of AI - Application Domains and Tools - Associated Technologies of AI - Future Prospects of AI - Challenges of AI. Introduction to Big data and IOT, Applications of Big data and IOT. Application and tools of Industry 4.0

Total: 15 Hours


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REFERENCES

1. Alasdair Gilchrist. Industry 4.0: The Industrial Internet of Things, Apress Publications, 2016.
2. Introduction to Industry 4.0 and Industrial Internet of Things by Prof.Sudip Misra,IIT Kharagpur.(NPTEL)
3. Industry 4.O: Managing Digital Transformation by [Ustundag](#), [Emre Cevikcan](#), Springer publications, 2017.



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U18FTC0015 E- Marketing**Course Outcomes**

After successful completion of this course, the students should be able to

CO 1	Outline the benefits of E marketing	K2
CO 2	Analyze the ethical issues in E marketing	K4

Pre Requisite: Nil

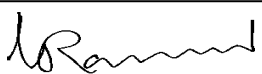
CO/PO Mapping														
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak														
CO	Programme Outcomes (PO's)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO 1					M	S		M						
CO 2				S			M	S		S				M

Course Assessment methods:

DIRECT	INDIRECT
Internal test	Course exit survey

E-Marketing-An Overview – Introduction, Objectives, Definition, History and, Features of E-Marketing, Scope of E-Marketing, Benefits of E-Marketing, Problems in E-Marketing, E-marketing Techniques. Types of E-Market - E-Malls, E-Storefront, E-Marketplace. E-Marketing Tools, Creating a Website, Social Media Marketing. Customer Relationship Management – Concept of E-CRM. Legal and Ethical Issues in E-Marketing

Total: 15 Hours


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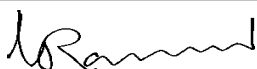
REFERENCES

1. eMarketing: The essential guide to marketing in a digital world by Rob stokes, Red and yellow publisher, 2014.
2. Digital Marketing Strategy: An Integrated Approach to Online Marketing by Simon Kingsnorth, Kogan Page, 2016
3. E Marketing – The essential guide to online marketing, Rob Stokes, Flat world publisher, 2010.



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OPEN ELECTIVE COURSES



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U18FTO0001 FASHION PHOTOGRAPHY**Course Outcomes**

After successful completion of this course, the students should be able to

L	T	P	C
3	0	0	3

CO1	Summarize knowledge on types of camera, working principles of camera and their various accessories.	K2
CO2	Apply basic techniques, equipment techniques, and subject techniques of various camera in photography	K3
CO3	Identify the importance of lighting, types of lighting, film types, film speed, and film format.	K4
CO4	Summarize skills on fashion photography in different fields	K6
CO5	Apply knowledge on developing and printing, image mixing and printing.	K3
CO6	Explain the applications of computer in photography and video photography	K3

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation	1.Course Exit Survey

Course Content**INTRODUCTION:****9 Hours**

Camera types–35mm, SLR, Digitalcamera. Working principleofcamera.Accessories:generalaccessories-lenses,lensfilters, filmtypes,flashlights-lightingaccessories - poweraccessories,systemaccessories.Careandmaintenance ofcamera.

TECHNIQUES:**12 Hours**

Cameratechniques:Basistechniques– fundamentalsofcomposition,depthoffield,shutterspeed, focusing,usingexposures.Equipment techniques – filter techniques, lens techniques, flashtechniques, studio flash techniques, lightingtechniques.Subject techniques – landscape,night photography, portrait, action photography and special effects. OutdoorandIndoorPhotography–equipments.

LIGHTING AND FILM:**9 Hours**

Lighting– concept and importance– Types oflighting – frontlight,sidelight,backlight,revealinglight,controlling light, flashandstudiolighting.Filmtypes– BlackandWhite, Colour.Filmspeed-Film format.

SUBJECT PHOTOGRAPHY:**6 Hours**

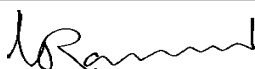
Fashion Photography in different media– modeling,newspaper,magazinesandfashionshows. Concept/theme based photography along with its application and acceptability in marketing and commercialization/branding.

DEVELOPING AND PRINTING:**9 Hours**

Basics of developing and printing – imagemixingandprinting – Latest developments in printing –Computer applicationinphotography.Video photography

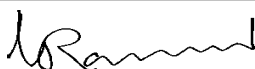
Theory: 45 Hours**Total: 45 Hours****REFERENCES**

1. Nirmal Pasricha, “A Professional’s Basic Photography”, Black



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



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U18FTO0002 TEXTILE ARTS AND CRAFTS**Course Outcomes**

After successful completion of this course, the students should be able to

L	T	P	C
3	0	0	3

CO1	Summarize knowledge on design concepts and colour categories.	K2
CO2	Apply basic techniques in design development	K3
CO3	Summarize skills on printing and painting techniques	K4
CO4	Summarize the knowledge on embroidery	K4
CO5	Apply knowledge on developing and printing, image mixing and printing.	K3
CO6	Explain the designing process in product development	K3

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation	2.Course Exit Survey

Course Content**Design concepts****10 Hours**

Design: structural, decorative and functional; Types- natural, stylized, geometric, historic, abstract design; Elements of Design; Principles of design, Application of elements and principles of design. Colour: Dimensions of colour, colour categories, and psychology, colour theories- Prang colour system and colour harmonies.

Design development**15 Hours**

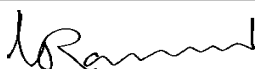
Introduction & Overview of the traditional designs of India. Techniques: block printing, stencilling, screen printing, tie and dye, batik, Kalamkari, Painting.
Embroidery: Basic hand stitches, composite stitches, traditional Indian embroidery.

Product development**20 Hours**

Designing Process: Forecasting, Design process – Innovation of practice, analyzing the brief, Research Inspiration – Research direction, prototyping.
Development process: planning a collection, designer boards and portfolio presentation for a product

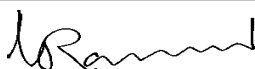
Theory: 45 Hours**Total: 45 Hours****REFERENCES**

1. Kathryn McCelvey and Janine Munslow, —Fashion Design: Process, Innovation and Practice, Blackwell Publishing, USA, 2005.



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2. HatanakaKokyo Collection —Textile arts of India, Chronide Books, 1996
3. Elaine Stone, Jean A. Samples, — Fashion Merchandising, McGraw-Hill Book Company 1985.
4. RusselGillow and Nicholas Barnard, —Traditional Indian Textiles, Thames and Hudson Ltd., London, 1991.
5. ParulBhatnagar, —Traditional Indian Costumes and Textiles, Abhishek Publications, Chandigarh, 2004.
6. Jay Diamond and Ellen Diamond, —Fashion, Apparel, Accessories, Home Furnishings|| Pearson Prentice Hall, New Jersey, 2007.
7. UshaSrikant, —Designs for a lifetime, Samata Enterprises, Mumbai, 2002.



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U18FTO0003 HOME FURNISHING AND DECORATION FOR BEGINNERS

Course Outcomes

After successful completion of this course, the students should be able to

L	T	P	C
3	0	0	3

CO1	Generalize knowledge about the varieties of home furnishing materials and finishing methods	K3
CO2	Developing skills in the selection of different varieties of home furnishing materials in terms of sizes, shapes and patterns and construction methods	K4
CO3	Analyze the knowledge on suitability of furnishings and coverings for living room.	K4
CO4	Analyze the knowledge on suitability of various types of linens and its end uses	K4
CO5	Analyze the knowledge on suitable care & maintenance of home furnishing materials.	K4
CO6	Assess the varieties of home furnishing products and its end uses	K4

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation	3.Course Exit Survey

Course Content

Introduction

15 Hours

Introduction of home decoration -types of home decoration, types of furniture and furnishing materials used in home. Window treatments - Doors and Windows – types. Window Treatment –. Curtains and Draperies

Floor covering and wall coverings

10 Hours

Floor covering - types – Hard floor covering, resilient floor coverings, soft floor coverings - carpet, rugs, mats. Wall coverings- types

Bed and bath linen

20 Hours

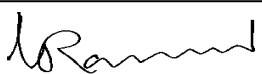
Bed linens – types – Bed linens – types – bed sheets, blankets, comforters, , bed spreads, mattress and pads, pillows and pillow covers. Care and Maintenance of bed linen.
Kitchen linens – types - dish cloth, towels, fridge cover, grinder cover

Table Linen – Types - table mats, table cloth, hand towel, doilies, runners. Cleaning materials – wipes and mops. Care and maintenance of kitchen and table linen. Care and maintenance of home furnishing materials and its assessments.

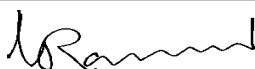
Theory: 45 Hours

Total: 45 Hours

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2. David Holloway, "The Essential Book of Home Improvement Techniques", Marshals Publications, London, 2000.
3. Emma Callery, "The Home Decorator's Colour Source Book", Apple Press Ltd, London, 2006.
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6. Susie Johns, "A Cornucopia of Cushions", Apple Press Ltd, London, 1997.
7. James Merrell, "Living with Decorative Textiles", "Thames and Hudson ltd, London, 1995.
8. Caroline Lebea, "Fabrics the Decorative Art of Textiles", Thames and Hudson Ltd, London, 1994



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U18FTO0004 CREATIVE ARTS AND CRAFTS**Course Outcomes**

After successful completion of this course, the students should be able to

L	T	P	C
3	0	0	3

CO1	Explain types of shapes and its application in designing	K2
CO2	Apply basic techniques in sketching in design development	K3
CO3	Summarize skills on shaping and painting techniques	K4
CO4	Explain the basics in sculpturing and colour application	K4
CO5	Apply knowledge on developing and printing, image mixing and printing.	K3
CO6	Explain the techniques in glass painting and flower making	K3

Course Assessment methods

Direct	Indirect
1. Internal tests 2. Assignment 3. Group Presentation	4.Course Exit Survey

Shapes**10 Hours**

Types of shapes and model on clay embossing champagne grapes. Basic shapes- Drawing-Shaping-Sculpturing-Designing-Painting.

Sketching and colouring**15 Hours**

Model on foil work girl. Model on multi colour flower mirror frame. Outlining small figures-Sketching-Background preparation-Sheet filling.

Preparation for model cutting-Colouring-Shaping-Sculpturing-Painting.

Model on plaster of paris Lord ganesh. Base mixing-Fixing-Colour applying-Color mixing-Painting.

Dotting and Finishing**20 Hours**

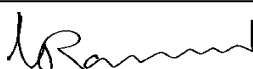
Model on warli tribal art. Model on tanjore glass painting. Base work-Drawing-Shaping-Sculpturing-Colour applying-Painting.

Dotting-Color mixing-Applying(dotting surface)-Skin tone-Background-Finishing.

Model on glass bottle art-2 techniques. Basic techniques-Background texture-Mixing-Drawing-Painting. Black matt finish-Clay modelling-Flower making-Painting.

Theory: 45 Hours**Total: 45 Hours****REFERENCES**

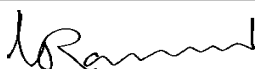
1. HatanakaKokyo Collection —Textile arts of India, Chronide Books, 1996
2. RusselGillow and Nicholas Barnard, —Traditional Indian Textiles, Thames and Hudson Ltd., London, 1991.
3. ParulBhatnagar, —Traditional Indian Costumes and Textiles, Abhishek Publications,



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Chandigarh, 2004.

4. Jay Diamond and Ellen Diamond, —Fashion, Apparel, Accessories, Home Furnishings|| Pearson Prentice Hall, New Jersey, 2007.
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