KUMARAGURU COLLEGE OF TECHNOLOGY
Coimbatore – 641 049

DEPARTMENT OF FASHION TECHNOLOGY
Choice Based Credit System – Regulations -2013

CURRICULUM AND SYLLABUS
For I to VIII SEMESTER

KUMARAGURU COLLEGE OF TECHNOLOGY
COIMBATORE – 641 049
(An Autonomous Institution affiliated to Anna University, Chennai)
DEPARTMENT OF FASHION TECHNOLOGY
Choice Based Credit System – **Regulations -2013**

CURRICULUM
B. Tech. - FASHION TECHNOLOGY

(TOTAL CREDITS- 183)

SEMESTER – I

Code No.	Course Title	L	T	P	C
THEORY					
U13EN*T*101	Technical English	2	1	0	3
U13MA*T*101	Engineering Mathematics – I	3	1	0	4
U13PH*T*101	Engineering Physics	3	0	0	3
U13CH*T*101	Engineering Chemistry	3	0	0	3
U13CS*T*101	Structured programming Using 'C'	3	0	0	3
U13ME*T*101	Engineering Graphics	2	0	3	3
PRACTICAL					
U13CH*P*101	Chemistry Laboratory	0	0	3	1
U13ME*P*101	Engineering Practices Laboratory	0	0	3	1
U13CS*P*101	Structured Programming Laboratory Using 'C'	0	0	3	1
U13GHP101	Human Excellence - Personal Values – I	1	0	1	1
Total		**17**	**2**	**13**	**23**

TOTAL HOURS – 32 **TOTAL CREDITS – 23**

SEMESTER – II

Code No.	Course Title	L	T	P	C
THEORY					
U13ENT201	Professional English	1	0	2	2
U13MA*T*201	Engineering Mathematics - II	3	1	0	4
U13PH*T*205	Applied Physics	3	0	0	3
U13CH*T*204	Chemistry for Textiles	3	0	0	3
U13FT*T*201	Fiber Science and Yarn Technology	3	0	0	3
U13FT*T*202	Weaving Technology	3	0	0	3
PRACTICAL					
U13PH*P*201	Physics Laboratory	0	0	3	1
U13FT*P*201	Textile Production Process Laboratory	0	0	3	1
U13CS*P*211	Computing Laboratory	0	0	3	1
U13GH*P*201	Human Excellence - Personal Values -II	1	0	1	1
Total		**17**	**1**	**12**	**22**

TOTAL HOURS – 30 **TOTAL CREDITS – 22**

SEMESTER III

Code No.	Course Title	L	T	P	C
THEORY					
U13MA*T*305	Probability and Applied Statistics	3	1	0	4
U13FT*T*301	Concepts of Fashion and Design	3	0	0	3
U13FTT302	Knitting Technology	3	0	0	3
U13FT*T*303	Basic Garment Technology	3	1	0	4
U13FT*T*304	Pattern Engineering	3	1	0	4
U13EE*T*311	Basics of Electrical and Electronics Engineering	3	0	0	3
PRACTICAL					
U13FT*P*301	Fashion Design Laboratory - I	0	0	3	1
U13FT*P*302	Basic Garment Technology Laboratory	0	0	3	1
U13EE*P*311	Basics of Electrical & Electronics Engineering Laboratory	0	0	3	1
U13GHP301	Human Excellence - Family Values	1	0	1	1
Total		**19**	**3**	**10**	**25**

TOTAL HOURS – 32 **TOTAL CREDITS – 25**

SEMESTER – IV

Code No.	Course Title	L	T	P	C
THEORY					
U13MA*T*401	Numerical Methods	3	1	0	4
U13GS*T*001	Environmental Science and Engineering	3	0	0	3
U13FT*T*401	Apparel Production Technology	3	1	0	4
U13FT*T*402	Apparel Machinery and Equipment	3	0	0	3
U13FT*T*403	Fabric Structure and Design	3	1	0	4
U13MET407	Basics of Mechanical Engineering	3	0	0	3
PRACTICAL					
U13FT*P*401	Fashion Design Laboratory - II	0	0	3	1
U13FT*P*402	Apparel Machinery Laboratory	0	0	3	1
U13FT*P*403	Fabric Structure and Design Analysis Laboratory	0	0	3	1
U13GHP401	Human Excellence - Professional Values	1	0	1	1
Total		**19**	**3**	**10**	**25**

TOTAL HOURS – 32 **TOTAL CREDITS – 25**

SEMESTER – V

Code No.	Course Title	L	T	P	C
THEORY					
U13FT*T*501	Fashion Apparel Design and Development	3	1	0	4
U13FT*T*502	Surface Ornamentation and Accessories	3	1	0	4
U13FT*T*503	Clothing Science and Fit	3	0	0	3
U13FT*T*504	Textile Chemical Processing	3	0	0	3
U13FT*T*505	Textile and Apparel Quality Evaluation	3	0	0	3
U13FT*E*1--	Elective I	3	0	0	3
PRACTICAL					
U13FT*P*501	Apparel Production Laboratory - I	0	0	3	1
U13FT*P*502	Textile Chemical Processing Laboratory	0	0	3	1
U13FT*P*503	Textile Quality Evaluation Laboratory	0	0	3	1
U13FT*P*504	Industrial Training*	0	0	-	1
U13GHP501	Human Excellence - Social Values	1	0	0	1
Total		**19**	**2**	**9**	**25**

TOTAL HOURS – 30 **TOTAL CREDITS – 25**

* - Industrial Training to be undertaken during the 4th semester summer vacation - Internal evaluation only

SEMESTER – VI

Code No.	Course Title	L	T	P	C
THEORY					
U13GS*T*008	Profession Ethics	3	0	0	3
U13FT*T*601	Apparel Product Development	3	0	0	3
U13FT*T*602	Apparel Merchandising	3	0	0	3
U13FT*T*603	Apparel Production Planning and Control	3	1	0	4
U13FT*T*604	Apparel Finishing and Care	3	0	0	3
U13FT*E*2--	Elective II	3	0	0	3
PRACTICAL					
U13FT*P*601	Apparel Production Laboratory - II	0	0	3	1
U13FT*P*602	Apparel CAD Laboratory	0	0	3	1
U13ENP401	Communication Skill Laboratory	0	0	3	1
U13GHP601	Human Excellence - National Values	1	0	0	1
Total		**19**	**1**	**9**	**23**

TOTAL HOURS – 29 **TOTAL CREDITS – 23**

SEMESTER – VII

Code No.	Course Title	L	T	P	C
THEORY					
U13FT*T*701	Industrial Engineering in Apparel Manufacturing	3	1	0	4
U13FT*T*702	Sustainability in Apparel Industry	3	0	0	3
U13FT*T*703	Quality Assurance in Apparel Production	3	0	0	3
U13FT*T*704	Costing in Apparel Industry	3	1	0	4
U13FT*T*705	Apparel Export Management	3	0	0	3
U13FT*E*3--	Elective III	3	0	0	3
PRACTICAL					
U13FT*P*701	Apparel Quality Evaluation Laboratory	0	0	3	1
U13FT*P*702	Portfolio Presentation	0	0	3	1
U13FT*P*703	Mini Project *	0	0	-	1
U13GHP701	Human Excellence - Global Values	1	0	0	1
Total		**19**	**2**	**6**	**24**

TOTAL HOURS – 27 **TOTAL CREDITS – 24**

* - Mini Project to be undertaken during the 6th semester summer vacation - Internal evaluation only

SEMESTER VIII

Code No.	Course Title	L	T	P	C
THEORY					
U13FT*E*4--	Elective IV	3	0	0	3
U13FT*E*5--	Elective V	3	0	0	3
U13FT*E*6--	Elective VI	3	0	0	3
PRACTICAL					
U13FT*P*801	Project Work	0	0	18	6
Total		**9**	**0**	**18**	**15**

TOTAL HOURS – 27 **TOTAL CREDITS – 15**

ELECTIVES

Course Title		L	T	P	C
THEORY					
ELECTIVE – I (Semester V)					
U13FT*E*101	Fashion Photography	3	0	0	3
U13FT*E*102	Visual Merchandising	3	0	0	3
U13FT*E*103	Garment Trims and Accessories	3	0	0	3
U13CSE141	Object Oriented Programming with C++	2	0	2	3
ELECTIVE – II (Semester VI)					
U13FT*E*201	Intimate Apparels	3	0	0	3
U13FT*E*202	Home Furnishings	3	0	0	3
U13FT*E*203	Fashion Communication and Marketing	3	0	0	3
U13GS*T*003	Principles of Management	3	0	0	3
U13GS*T*004	Operations Research	3	0	0	3
ELECTIVE – III (Semester VII)					
U13FT*E*301	Creativity, Innovation and New Product Development	3	0	0	3
U13FT*E*302	Logistics and Supply Chain Management	3	0	0	3
U13FT*E*303	Functional Clothing	3	0	0	3
U13FT*E*304	Fashion Retail Management	3	0	0	3
U13GS*T*002	Total Quality Management	3	0	0	3
ELECTIVE – IV (Semester VIII)					
U13FT*E*401	Application of Computers in Apparel Industry	3	0	0	3
U13FT*E*402	Leather Apparel Technology	3	0	0	3
U13FT*E*403	Application of ERP and MIS in Apparel Industry	3	0	0	3
U13FT*E*404	Technical Textiles	3	0	0	3
U13FT*E*405	Global Marketing and Sourcing Strategies	3	0	0	3
ELECTIVE – V (Semester VIII)					
U13FT*E*501	Nonwovens	3	0	0	3
U13FT*E*502	Product Engineering and Plant Layout	3	0	0	3
U13FT*E*503	Social Compliance for Apparel Industry	3	0	0	3
U13FT*E*504	Apparel Brand Management	3	0	0	3
ELECTIVE – VI (Semester VIII)					
U13FT*E*601	Entrepreneurship Development	3	0	0	3
U13FT*E*602	Energy Management in Apparel Industry	3	0	0	3
U13GS*T*005	Engineering Economics and Financial Management	3	0	0	3
U13GS*T*006	Product Design and Development	3	0	0	3

SEMESTER I

U13ENT101 TECHNICAL ENGLISH

(Common to all branches of Engineering and Technology)

L	T	P	C
2	1	0	3

OBJECTIVES

To offer exposure to the extensive usage of Technical English with special reference to corporate world communication

- To embark on systematic, syntactic and semantic proficiency of Technically used English
- To embellish the usage of English to exhibit engineering and technical concepts.
- To improvise the quality of Written Technical English.
- To develop the competency level of professional writing with a keen focus to corporate situations

UNIT-I FUNDAMENTALS OF TECHNICAL ENGLISH 12

Glimpses of Technical English – Systematic nuances of Technical English – Parts of Speech -Word Formation using Affixation – Vocabulary (synonyms and one word substitutes) – Tenses – Concord – Note making- Paragraph writing – Discourse markers – Sequencing of jumbled sentences.

UNIT-II GRAMMAR IN TECHNICAL ENGLISH 12

Editing (Grammar - Articles, Parts of Speech, Punctuation and Spelling Rules) – Reading Comprehension – Application of Conditional Sentences.

UNIT –III TECHINICAL EXPRESSIONS 12

Abbreviations and Acronyms – Expressions of Purpose and Function (Devices, Theories & Hypotheses) – Letter for practical training- Industrial visit – Interrogatives ('Wh' questions, Verbal Questions & Question Tags) – Reporting an incident / accident

UNIT –IV DRAFTING TECHNICAL DETAILS 12

Usage of Discourse Markers – Comparative Adjectives – Transcoding Graphics into continuous writing and text into graphics – Bar chart / Pie chart / Flow chart / Line graph / Tabulated data / Tree diagram or Organizational chart into text – E-mail Etiquette and its professional application.

UNIT-VAPPLICATIONS OF TECHNICAL ENGLISH 12

Periods

Definitions – Impersonal passive structures – Describing a technical process – Writing instructions – Making suggestions – Writing formal letters (Leave Letters, Apology letters, Applying for bank loans, Bona-fide certificate/ mark list, Joining report, Letters of complaint).

TOTAL: 60 hrs

TEXT BOOK

Rizvi Ashraf. M., Effective Technical Communciation, Tata McGraw Hill Publishing Co., Ltd., New Delhi, 2008.

REFERENCES

1. Dhanavel.S.P., English and Communication Skills for Students of Science and Engineering, Chennai, Orient Blackswan, 2009.
2. Devadoss K, Malathy P, Fundamentals and Usage of Technical English, National Book Publishers, Chennai, 2013

U13MAT101 ENGINEERING MATHEMATICS I

(COMMON TO ALL BRANCHES OF ENGINEERING & TECHNOLOGY)

L	T	P	C
3	1	0	4

OBJECTIVES:

On completion of the course the students are expected

- To know eigen values and eigen vectors and diagonalization of a matrix.
- To understand the concepts of three dimensional geometry including plane, straight line and sphere.
- To know about the geometrical aspects of curvature, evolute and envelope.
- To understand the concepts of partial differentiation, maxima and minima.
- To solve ordinary differential equations of certain types.

UNIT – I MATRICES **9**

Rank of a matrix – Linearly dependent and independent vectors – Eigen values and eigenvectors of a real matrix – Properties of eigen values and eigenvectors – Cayley Hamilton theorem (excluding proof) – Orthogonal matrices – Orthogonal transformation of a symmetric matrix to diagonal form – Reduction of quadratic form to canonical form by orthogonal transformation.

UNIT – II GEOMETRICAL APPLICATIONS OF DIFFERENTIAL CALCULUS **9**

Curvature – Radius, Centre and Circle of curvature in Cartesian, Parametric and Polar form – Evolute – Envelope of family of curves with one and two parameters – Evolute as the envelope of normals.

UNIT – III FIRST ORDER ORDINARY DIFFERENTIAL EQUATIONS **9**

Leibnitz's equation – Bernoulli's equation – Equations of first order and higher degree - Clairauts form – Applications: Orthogonal trajectories and simple Electric circuit problems.

UNIT – IV HIGHER ORDER LINEAR DIFFERENTIAL EQUATIONS **9**

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 - Application - Simple harmonic motion and oscillatory electrical circuit. (Differential equations and associated conditions need to be given).

UNIT –V FUNCTIONS OF SEVERAL VARIABLES **9**

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

Total: 60 hrs

TEXT BOOK:

1 Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 40th Edition. .

REFERENCES

1. Veerarajan T., Engineering Mathematics (for First Year), Tata McGraw Hill Pub. Co. Ltd., New Delhi, Revised Edition, 2007.
2. Kandasamy P., Thilagavathy K., and Gunavathy K., "Engineering Mathematics", S. Chand & Co., New Delhi, (Re print) 2008.
3. Kreyzig E., "Advanced Engineering Mathematics", Eighth Edition, John Wiley and sons, 2010.
4. Arunachalam, T., Engineering Mathematics I, Sri Vignesh Publications, Coimbatore. (Revised) 2009.
5. Venkataraman M.K., "Engineering Mathematics", The National Pub. Co., Chennai, 2003.
6. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, New Delhi, 2007.

U13PHT101 ENGINEERING PHYSICS

(Common to all branches of Engineering and Technology)

L	T	P	C
3	0	0	3

AIM:

- To enhance students knowledge of theoretical and modern technological aspects in physics.
- To enable the students to correlate the theoretical principles with application oriented studies.
- To introduce fundamentals of science for engineering applications.

OBJECTIVES

- At the end of the course the students would be exposed to fundamental knowledge in
- various engineering subjects and applications.
- structure identification of engineering materials.
- non-destructive techniques.
- interferometric techniques in metrology and electrical phenomena.
- application of lasers in engineering and technology.

UNIT – I: CRYSTAL PHYSICS **9**

Space lattice – unit cell – lattice planes – Bravais space lattices – Miller indices – calculation of interplanar distances – Atomic radius – co- ordination number – Packing factor for SC, BCC, FCC and HCP structures – crystal imperfections – point defects – line defects – surface defects – volume defects – effect of crystal imperfections.

UNIT- II: APPLIED OPTICS **9**

Interference – airwedge and its applications – Michelsons interferometer – construction, working – determination of wave length and thickness – Lasers – spontaneous and stimulated emissions – Einsteins coefficients – Nd: YAG, Co_2 and semiconductor laser – Homojunction (only qualitative description) – applications – holography (qualitative only) – optical fibre – principle and propagation of light in optcal fibers – Numerical aperture and acceptance angle – types of optical fibres – applications – fibre optic communication system – medical endoscopy.

UNIT-III: QUANTUM PHYSICS **9**

Plancks quantum theory of black body radiation (derivation) – Photo electric effect – Compton effect (derivation) and experimental verification of Compton effect – De-broglies concept - Schrodinger wave equation – time independent and time dependent equations (derivations) – physical significance of wave function – particle in a box (one dimensional case) – Electron microscope – Scanning electron microscope – Transmission electron microscope.

UNIT –IV: ULTRASONICS AND NDT **9**

Introduction – production – Magnetostriction effect – Magnetostriction generator – piezoelectric effect – piezo electric generator –properties –detection – cavitation –acoustic grating – velocity measurement – applications – Sonar –velocity of blood flow – NDT –Liquid Penetrant method – Ultrasonic flaw detector – A scan, B scan, C scan – X- ray radiography and fluoroscopy – Thermography.

UNIT – V: ELASTICITY AND VACUUM TECHNOLOGY **9**

Introduction – stress-strain diagram – factors affecting elasticity – twisting couple on a wire – shafts –torsion pendulum –Depression of a cantilever –Youngs modulus by cantilever method –uniform and non uniform bending – I- shape girders – Vacuum technology –importance of vacuum in industries –applications –production of vacuum – Rotary pump –Diffusion pump – measurement of vacuum – Pirani gauge – Penning gauge.

Total: 45 hrs

TEXT BOOK

1. Gaur R.K. and Gupta S.L., Engineering Physics, 8th edition, Dhanpat Rai Publications (P) Ltd., New Delhi, 2003.

2. Avadhanulu M.N.,& Kshirsagar P.G., A textbook of Engineering Physics, S.Chand & Company Ltd, New Delhi,2005

REFERENCES:

1. Rajendran V., Applied Physics., Tata McGraw Hill Publishing Company Limited, New Delhi, 2003.

2. Gopal S., Engineering Physics, Inder Publications, Coimbatore, 2006.

3.Palinisamy P.K., Engineering Physics – I, Scitech Publications, Channai,2011

U13CHT101- ENGINEERING CHEMISTRY
(Common to all branches of Engineering and Technology)

L	T	P	C
3	0	0	3

OBJECTIVES

- To develop a sound knowledge of theoretical and modern technological aspects of applied chemistry
- To correlate theoretical principles with application oriented studies

UNIT – I ELECTROCHEMISTRY 9

Introduction - Electrode potential – Nernst equation and problems - Electrochemical series - Application of EMF measurements & problems - Kohlrausch law of independent migration of ions & its application - Conductometric titrations (acid - base & precipitation titration)

Electrodes : Standard and reference electrode (Hydrogen & Calomel) – Types of electrodes (metal – metal ion; Metal – metal insoluble salt, Redox electrode) - Ion selective (glass electrode) – determination of pH using glass electrode

Cells : Galvanic cell – Types of concentration cells

UNIT – II ENERGY STORING DEVICES 9

Batteries : Primary Battery (Lechlanche & Alkaline battery) - Secondary Battery (Lead acid storage battery, Nickel - cadmium battery & Lithium – Polymer battery) – Flow battery (hydrogen and oxygen Fuel Cell)

Solar Energy: Hybrid Solar cells (Working, advantages & disadvantages)

Nuclear Energy: Nuclear fission (Reactions, Chain reactions & Characteristics of nuclear fission) - Nuclear reactor (light water nuclear power plant) - Nuclear fusion - an introduction to Inertial Confinement Fusion (ICF) and International Thermonuclear Experimental Reactor (ITER)

UNIT – III THERMODYNAMICS 9

Introduction - Thermodynamic process (isothermic, isobaric, isochoric and adiabatic processes) - Internal energy – first law of thermodynamics (Mathematical derivation & limitation) - Enthalpy - Second law of thermodynamics - Entropy - Entropy change of an ideal gas & problems - Free energy - work function - Gibbs Helmholtz equation (derivation, applications & problems) - Van't Hoff isotherm (derivation & problems) - Van't Hoff isochore - (derivation & problems) - Third law and zeroeth law (Only statements)

UNIT – IV SURFACE CHEMISTRY 9

Introduction of adsorption - Types of Adsorption - Adsorption isotherm (Freundlich isotherm, Langmuir adsorption isotherm, BET isotherm) - Applications of adsorption : Role of adsorption in catalytic reactions, Ion exchange adsorption, adsorption chromatography (Column chromatography)

UNIT – V SPECTROSCOPY 9

Introduction to spectroscopy - Beer Lambert's Law - Colorimetric analysis (principle, instrumentation (block diagram only) & application (Estimation of concentration of Ferrous and copper ions a solution by colorimetry) - - UV – visible spectroscopy (principles, instrumentation (block diagram only) & simple Applications) - IR spectroscopy (principles, instrumentation (block diagram only) & simple applications) - Flame photometry (Principle, instrumentation (block diagram only) & simple Applications)

TOTAL : 45

TEXT BOOK

1. Jain P.C. and Monika Jain, Engineering chemistry, Dhanpatrai Pub. Co. (P) Ltd., New Delhi
2. Kuriacose J.C. and Rajaram J., Chemistry in Engineering Technology, Vol 1 & 2, Tata Mcgraw hill Publishing Co. Ltd., New Delhi

REFERENCE

1. Bahl B.S. Tuli G.D and Arun Bahl., Essential of Physical Chemistry, S. Chand & Co.Ltd., New Delhi
2. Somorjai G.A., Introduction to surface chemistry and Catalysis, John Wiley and Sons Inc., New york
3. Shaw D.J. , Introduction to colloidal and surface Chemistry, Butterworth – Heinemann Publishers

Syed Shabudeen, P.S. and Shoba U S., Engineering Chemistry, Inder Publishers, Coimbatore

U13CS*T*101 STRUCTURED PROGRAMMING USING 'C'

L	T	P	C
3	0	0	3

OBJECTIVES

- To enable students to learn about the basics of computers and problem solving methods
- To learn the various features of C
- To learn how to program using C language

UNIT I **8**

Introduction: Programs and Programming- Programming languages and Their Classification - Compiler, Linker, Loader and Interpreter – Structured Programming Concept –Algorithm – Pseudo Code – Flow Chart. Number System – Binary – Decimal – Conversion Problems.

UNIT II **10**

C Language Basics: Introduction to C Programming –Fundamentals – Structure of a C Program – Compilation And Linking Processes – Constants, Variables – Data Types – Expressions Using Operators In C – Managing Input And Output Operations – Decision Making And Branching – Looping Statements – Solving Simple Scientific And Statistical Problems.

UNIT III **9**

Arrays and Strings: Arrays – Initialization – Declaration – One Dimensional And Two Dimensional Arrays. String- String Operations – String Arrays. Simple Programs- Sorting- Searching – Matrix Operations.

UNIT IV **9**

Functions: Definition of function – Declaration of function – Pass by value – Pass by reference – Recursion.
Storage classes – auto, static, extern, register- scope rules.
Pointers: Definition – Initialization – Pointers arithmetic – Pointers and arrays- Dynamic memory allocation - Example Problems

UNIT V **9**

Structures and Unions: Introduction – need for structure data type – structure definition – Structure declaration – Structure within a structure - Union - Programs using structures and Unions.
Files: Introduction – Using files in C- Working with text files.

Total: 45 Hrs

TEXT BOOK

1. Pradip Dey and Manas Ghosh, "Programming in C", First Edition, Oxford University Press, 2009.

REFERENCES

1. Rajasekaran S, "Numerical methods in Science and Engineering-A practical approach", S.Chand and Company, New Delhi-55, 2012.
2. Kernighan,B.W and Ritchie,D.M, "The C Programming language", Second Edition,
Pearson Education, 2006
3. Byron S Gottfried and Jitendar Kumar Chhabra, "Programming with C", Tata McGraw Hill Publishing Company, Third Edition, New Delhi, 2011.
4. Ashok N. Kamthane, "Computer programming", Pearson Education, 2007.

OUTCOMES

- Acquire knowledge on problem solving methods.
- Acquire knowledge about structured programming using C
- Develop skills for solving scientific and statistical problems

U13ME*T*101 ENGINEERING GRAPHICS
(Common to all branches of Engineering and Technology)

L	T	P	C
2	0	3	3

OBJECTIVES

- To understand the principle of orthographic projection of points, lines, surfaces and solids.
- To understand the principle of section and development of solids.
- To understand the principle of Isometric and Perspective projections.
- To study the principle of free-hand sketching techniques.

UNIT **I. PLANE CURVES, PROJECTION OF POINTS AND LINES** **15**

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.

UNIT 2. PROJECTIONS OF SURFACES AND SOLIDS **15**

Projections of plane surfaces - polygonal lamina and circular lamina, located in first quadrant and inclined to one reference plane., Projection of simple solids - prism, pyramid, cylinder and cone. Drawing views when the axis of the solid is inclined to one reference plane.

UNIT 3. SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES **15**

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

UNIT 4. PICTORIAL PROJECTIONS **15**

Isometric projection, Isometric scale, Isometric views of simple solids, truncated prisms, pyramids, cylinders and cones. Perspective projection of prisms and pyramids when its base resting on the ground by vanishing point method.

UNIT 5. FREE-HAND SKETCHING **15**

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

Total : 75 Hrs

TEXT BOOK

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.

REFERENCES

1. Nataraajan K.V, Engineering Drawing and Graphics, Dhanalakshmi Publisher, Chennai, 2005.
2. Warren J. Luzadder and Jon. M.Duff, Fundamentals of Engineering Drawing, Prentice Hall of India Pvt. Ltd., New Delhi, Eleventh Edition, 2005.
3. Gopalakirishna K.R., Engineering Drawing (Vol. I & II), Subhas Publications, 2001.

U13CHP101 CHEMISTRY LABORATORY
(Common to all branches of Engineering and Technology)

L	T	P	C
0	0	3	1

OBJECTIVES

Should be Conversant with the theoretical principles and experimental procedures for quantitative analysis and hands on experience in using analytical equipments.

PREPARATION OF SOLUTIONS (STANDARD)

1. Preparation of normal solutions of the following substances - oxalic acid, sodium carbonate, hydrochloric acid.
2. Preparation of phosphate buffer using Henderson equation.

WATER TESTING

3. Determination of total, temporary and permanent hardness by EDTA method.
4. Estimation of DO by Winkler's method.
5. Estimation of alkalinity by Indicator method.
6. Estimation of chloride by Argentometric method.

ELECTRO CHEMICAL ANALYSIS

7. Estimation of hydrochloric acid by pH metry.
8. Conductometric titration of mixture of acids and strong base
9. Conductometric precipitation titration using BaCl2 and Na2SO4.
10. Estimation of Iron by potentiometry

PHOTOMETRY

11. Estimation of the Ferrous ions (Thiocyanate method) by Spectrophotmetry.
12. Estimation of sodium and potassium by Flame photometry.

Total : 45hrs

REFERENCES

1. Jeffery, G.H., Bassett, J., Mendham, J. and Denny, R.C., Vogel's Text Book of Quantitative Chemical Analysis, Oxford, ELBS, London, 2002.
2. Shoemaker D.P. and C.W. Garland., Experiments in Physical Chemistry, Tata McGraw-Hill Pub. Co., Ltd., London, 2003.
3. Shoba, U.S., Sivahari, R. and Mayildurai, R., Practical Chemistry, Inder Publications, Coimbatore, 2009.

U13ME*P*101 ENGINEERING PRACTICES LABORATORY

L	T	P	C
0	0	3	1

(Common to all branches of Engineering and Technology)

A. CIVIL ENGINEERING

1. Carpentry

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

2. Plumbing

- Study of pipeline joints
- Preparation of plumbing line sketches for water supply.

B. MECHANICAL ENGINEERING

1. Fitting

- Study of fitting tools
- Preparation of L joint
- Preparation of square joint

2. Sheet Metal Working

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

3. Welding

- Study of arc welding tools and equipment
- Preparation of butt joint **21**

Group - II (Electrical & Electronics Engineering)

C. ELECTRICAL ENGINEERING PRACTICE **12**

- Basic household wiring using switches, fuse, indicator-lamp, etc.,
- Preparation of wiring diagrams.
- Stair case light wiring.
- Tube light wiring
- Study of iron-box, fan with regulator, emergency lamp and microwave oven.

D. ELECTRONIC ENGINEERING PRACTICE **12**

List of Experiments

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

Total : 45 hrs

U13CS*P*101 STRUCTURED PROGRAMMING LABORATORY USING 'C'

L	T	P	C
0	0	3	1

OBJECTIVES

- To enable students to solve problems using C
- To apply the various features of C

List of Experiments

1. Simple programs
    - To find whether the given number is prime or not
    - Factorial of the given number
2. Programs involving Control and Looping Structures
    - Arithmetic Progression
    - Trigonometric series evaluation
3. Programs using Arrays
    - Sorting
    - Matrix addition and Multiplication
4. Calculation of median of a frequency distribution.
5. Evaluation of integrals
    - Trapezoidal Rule
6. String Processing
7. Program using Recursive function
8. Using pointers in C
9. Program using Functions, Structures and Files
    - Students Mark Analysis
10. Iterative method for finding Roots of the polynomials
    - Lagrange interpolation method

OUTCOMES

- Develop skills on use of C for simple problem solving
- Develop skills on the usage of C for statistical and scientific problem solving
- Acquire skills on the usage of C for statistical and scientific problem solving

U13GHP101 HUMAN EXCELLENCE - PERSONAL VALUES – I

L	T	P	C
1	0	1	1

(Common to all branches of Engineering and Technology)

UNIT - I

Introduction - importance - human excellence - objectives - personal values - definition - purpose - philosophy of life – self – society – nature. Definition – three body – physical body – astral body – causal body.

UNIT – II

Introduction – Association of panchabhoothas. definition – pain – disease – death. soul – life force – biomagnetism – genetic center . Definition – Mind – ten stages – work.

UNIT – III

Introduction – Introspection – importance – blemishes(impurities) – selfishness – six bad qualities in one's character – sinful activity. Setting right the six factors in character – what do you search for the introspection.

UNIT – IV

Thought analysis - definition – an exposition on the nature of thought - causes need – habit – environmental conditions – imposition by others – heredity – divinity – introspection for analysis of thought – practical technique for analysis of thought Definition – thoughts – causes - analysis of thought - orgin of thought - its effect – what youthink - you become – tabular column - method – practice.

UNIT – V

Introduction – Meditation – Nadi suddhi – Thanduvada suddhi. Introduction - Benefits of Breathing Exercise – Practice of Breathing Exercise.

Total : 15Hrs

SEMESTER – II

U13EN*P*201 PROFESSIONAL ENGLISH

L	T	P	C
1	0	2	2

(Common to all Engineering and Technical Branches)

Method of End Semester Evaluation: Writing : 60 marks, Practical : 40 marks

OBJECTIVES

- To enhance application oriented usage of English language
- To inculcate essential language proficiency through a good combination of practical and theoretical exposure
- To widen the area of creative writing skill of the students
- To initiate the students to make use of English to exhibit their professionalism
- To enable the students with adequate language exposure to business, professional and corporate facets of life.

UNIT –I RUBRICS OF PUBLIC SPEAKING 12

Vocabulary (Antonyms) – Homonyms- Use of Compound Prepositions – Public address (compering /welcoming / proposing vote of thanks) –- Creating Advertisements.

UNIT –II ESSENTIAL REQUISITES OF PROFESSIONAL ENGLISH 12

Compound Nouns – Gerunds and Infinitives – Workplace Idioms – Reported Speech– Preparing a Check list- Composing Statement of Purpose (**SOP**) - Preparing a Resume with Cover letter.

UNIT –III CORPORATE CORRESPONDENCE 12

Usage of Cause and Effect Expressions – Collocation - Business Letters (quotation, order and complaint) – Composing a letter of resignation- recommendations – Composing e-Mail – Reading for information / global understanding- Writing Notices and Circulars.

UNIT –IV NUANCES OF ENGLISH 12

American Vs British English – Contractions – Types of Conversations – Assertive, Persuasive Conversations – Telephonic Conversations – Greetings – Pronunciation tips – Reviewing books / articles.

UNIT –V SENSITIZING LANGUAGE SKILLS 12

Picture perception – Importance of Body Language in presentation – Strategic usage of Power Point Presentations – Essay writing.

TOTAL: 60 hrs

REFERENCES:

Krishnaswamy N & Sri Raman T.Creative English for Communication.MacMillan pub, Chennai.2009.
Devadoss., K & Malathy., P., Interfacing with Corporate, National Book Publishers, Chennai, 2013

U13MAT201 ENGINEERING MATHEMATICS - II

L	T	P	C
3	1	0	4

(COMMON TO CE, AE, ME, MCE, EEE, ECE, EIE, AUE,FT & TXT BRANCHES)

On completion of the course the students are expected

- to understand double and triple integrations and enable them to find area and volume using multiple integrals.
- to know the basics of vector calculus comprising gradient , divergence and curl and line, surface and volume integrals.
- to understand analytic function and conformal mappings.
- to know the basics of residues, complex integration and contour integration.
- to understand about Laplace transform and its properties & to solve certain linear differential equations using Laplace transform technique.

UNIT – I MULTIPLE INTEGRALS **9**

Double integration – Cartesian and polar coordinates – Change of order of integration –Change of variables between cartesian and polar coordinates - Triple integration in cartesian coordinates – Application : Area as double integral – Volume as triple integral - Gamma and Beta function – properties.

UNIT –II VECTOR CALCULUS **9**

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) – Simple applications involving cubes and rectangular parallelopipeds.

UNIT – III ANALYTIC FUNCTION **9**

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 , $1/z$ and bilinear transformation.

UNIT – IV COMPLEX INTEGRATION **9**

Statement and applications of Cauchy's integral theorem and Cauchy's integral formula (excluding proofs) – Taylor's and Laurent's series expansions – Singularities – Residues – Cauchy's residue theorem (excluding proof) – Application of residue theorem to evaluate real integrals - Unit circle and semi-circular contours (excluding poles on real axis).

UNIT – V LAPLACE TRANSFORM **9**

Laplace Transform – Conditions for existence – Transform of elementary functions – Basic properties — Transform of derivatives and integrals – Transform of unit step function and impulse function - Transform of periodic functions – Inverse transforms - Convolution theorem – Application to solution of linear ordinary differential equations of second order with constant coefficients.

Total : 60 hrs

TEXT BOOK

Veerarajan T., "Engineering Mathematics" (for First Year), Tata McGraw Hill Pub. Co. Ltd., New Delhi, Revised Edition, 2007.

REFERENCES

1 Kreyzig E., "Advanced Engineering Mathematics", John Wiley & Sons (Asia) Pvt, Ltd., Singapore, 8th Edition, 2001.

2 Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, Delhi, 36th Edition, 2001.

3 Venkataraman M.K., "Engineering Mathematics", Volume - II, The National Pub. Co., Chennai, 2003.

4 Kandasamy P., Thilagavathy K., and Gunavathy K., "Engineering Mathematics",

5. Chand & Co., New Delhi, (Re print) 2008.

6. Arunachalam, T., Engineering Mathematics II, Sri Vignesh Publications, Coimbatore. (Revised) 2009.

U13PHT205 APPLIED PHYSICS

L	T	P	C
3	0	0	3

(Common to Textile Technology and Fashion Technology)

OBJECTIVES

At the end of the course the students would be exposed to

- Properties of conducting, super conducting, magnetic and dielectric materials.
- Properties of Semi conducting, optical and new engineering materials.
- Application of ultrasonic and nuclear physics in medicine.

UNIT – I CONDUCTING AND SUPERCONDUCTING MATERIALS 9

Classical free electron theory of metals-Electrical conductivity – Thermal conductivity - expression – Wiedemann Franz law(derivation) – Lorentz number – drawbacks of classical theory – Fermi distribution function – density of energy states – effect of temperature on Fermi energy – Superconducting phenomena – properties of superconductors – Meissner effect, Isotope effect, Type I &Type II superconductors – High Tc superconductors - Applications – cryotron, magnetic levitation and squids.

UNIT - II SEMICONDUCTING MATERIALS 9

Origin of band gap in solids (Qualitative treatment only) - Concept of effective mass of an electron and hole – carrier concentration in an intrinsic semi conductor (derivation) – Fermi level – variation of Fermi level with temperature - Electrical conductivity – band gap semiconductor – carrier concentration in n-type and p-type semi conductors (derivation) – Variation of Fermi level with temperature and impurity concentration – Hall effect – Determination of Hall coefficient – experimental set up – Applications.

UNIT – III MAGNETIC & DIELECTRIC MATERIALS 9

Properties of dia, para, ferro, anti ferro and ferri magnetic materials - Langevin's theory of paramagnetism – Weiss theory of Ferromagnetism – Domain theory of ferromagnetism - hysteresis – soft and hard magnetic materials – Ferrites – Applications - magnetic recording and readout - Storage of magnetic data, Tapes, floppy, magnetic disc drives – Bubble memory - dielectric materials – Electronic, ionic, orientation and space charge polarization - Frequency and temperature dependence of polarization – Dielectric loss – Dielectric breakdown – different types of break down mechanism - Ferro electric materials - properties and applications.

UNIT – IV NANOTECHNOLOGY AND NEW ENGINEERING MATERIALS 9

Metallic glasses – preparation, properties and applications – shape memory alloys (SMA) – characteristics, properties of NiTi alloy applications advantages and disadvantages of SMA – Nano materials - synthesis - plasma arcing – Chemical vapour deposition – sol-gel - Electro deposition – ball milling – properties of nanoparicles and applications. – Carbon nano tubes – fabrication - arc method – pulsed laser deposition - Chemical vapour deposition - structure, properties & applications.

UNIT – V PLASMA PHYSICS 9

Introduction – Fundamentals of plasma – Plasma parameters – Degree of Ionization – Plasma Temperature – Electron temperature – Debye length – Plasma sheath – Condition for plasma existence - Plasma types – Thermal plasma – Cold plasma – Production of cold plasma – electrode plate technique – DBD Technique – Continues plasma processing - Application of plasma – Surface cleaning and Etching – Surface modification of textiles – Surface modification of biomedical polymers.

Total: 45 hrs

TEXT BOOKS:

1 Avadhanalu.M.N. and Kshirsagar.P.G, "A textbook of Engineering Physics," S.Chand & Company Ltd, New Delhi,2005.

2. Pillai S.O., Solid State Physics, 5th edition, New Age International Publication, New Delhi, 2003.

REFERENCE BOOKS:

1. Rajendran V.Engineering Physics, Tata McGraw Hill Publishing Company Limited, New Delhi, 2011

2.Gopal.S, "Materials Science" Inder Publications, Coimbatore, 2007.

3.Ali Omar M, Elementary Solid State Physics, Pearson Education (Singapore), Indian Branch, New Delhi, 2002.

4.Palanisamy, P.K., Materials Science, 2nd Edition, Scitech Pub. India, Pvt., Ltd

U13CHT204 CHEMISTRY FOR TEXTILES
(Common for Fashion technology, Textile technology)

L	T	P	C
3	0	0	3

OBJECTIVE

To impart a sound knowledge on basics of

- Theoretical and modern technological aspects in dyeing, polymer and water technology as required for the fashion technology students.

Students should be conversant with

- application of chemistry in textile technology
- the analytical concepts and applying them where ever and when ever required.

UNIT - 1 WATER TECHNOLOGY 9

Disadvantages of hard water in textile industries – conditioning methods : external treatment methods (Ion exchange method), internal treatment (colloidal, phosphate, calgon & carbonate methods) – desalination (reverse osmosis and electro-dialysis) – Common effluent Treatment.

UNIT – 2 POLYMERS 9

Introduction – Degree of polymerization – functionality - classification based on source, application, thermal properties (thermosetting and thermoplastics) - effect of polymer structure on properties – types of polymerization (addition, condensation, co-polymerization, Ring polymerisation) - mechanism of polymerization (free radical mechanism)

Preparation (mechanism not required) and applications of polythene, polypropylene, polystyrene, polyamides (nylon 6,6), polyesters (PET)

UNIT -3. CHEMICAL BONDING 9

Ionic, covalent and co-ordinate covalent bonds (overview only) -- hydrogen bonding and its consequences - van der Waal's forces (dipole – dipole, dipole – induced dipole, induced dipole – induced dipole interactions) - Interaction of enzymes with fibres (basic concepts only)

Thermal analysis (TGA and DSC): Principle, Instrumentation and application in Textiles

UNIT – 4 DYES 9

Introduction - Classification system of dyes - Chromophore and auxochromes – Important chemical chromophores of dyes classes (azo, anthraquinone, phthalocyanin, Indigoid, polymethine, phthalocyanine, metal complex, Fluorescent) - synthesis of azo dye (Congo red), triaryl methane dye (Malachite green), Anthraquinone dye (Alizarin - 1,2 dihydroxy anthraquinone), Indigoid dye (Indigo), phthalein dyes (Eosin)

UNIT- 5 ANTHOLOGY OF SPECIALITY CHEMICALS IN TEXTILES 9

An introduction on chemistry of the following in textiles: Dispersing agents (Naphthalene condensate products, Polymeric dispersing agent), levelling agents (nonionic, or carrier) Retarding agents (cationic leveling agents), Dye fixing agents (Metallic type, formaldehyde and Polyamine type)

Interaction between fibers and dyes (basic concepts only) - Dyes substrate affinity (dyes for cellulose fibres, silk)

Total : 45 hrs

REFERENCES

1. Finar I.L, Organic chemistry,.Publishing house, UK
2. Hungar K., Industrial Dyes, Chemistry, properties and applications, Wiley VCH Verlag GmbH & Co. KGaA, Weinheim
3. Sivaramakrishnan C.N., Anthology of speciality chemicals for textiles, Colour publications Pvt. Ltd, Mumbai, India.
4. Seymour, R.B. and Carraher, Polymer chemistry, Plenum publishing corporation, New york,
5. Kuriacose J.C. & Rajaram, J. Chemistry in Engineering and Technology, Vol.1 & 2, Tata McGraw-Hill Pub. Co., Ltd., New Delhi,
6. Syed Shabudeen P.S. and Shoba U.S., Chemistry for textiles, Inder publications, Coimbatore.

U13FT*T*201 Fibre Science and Yarn Technology

L	T	P	C
3	0	0	3

To acquire knowledge on properties of textile fibres and their manufacturing methods

To impart knowledge on the conventional and modern yarn manufacturing process

UNIT I **9**

Textile fibres: Introduction: Definition of staple fibre, filament, bicomponent fibres. Classification of natural and man-made fibres, essential and desirable properties of fibres.

Production and cultivation of Natural Fibers: Cultivation of cotton, production of silk (sericulture), wool and jute – physical and chemical structure of these fibres.

Production sequence of modified cellulosic fibres: Viscose Rayon, Acetate Rayon, high wet modulus and high tenacity fibres.

UNIT II **9**

Production Sequence of Synthetic Fibers: Polyester, Nylon and Acrylic. Introduction to spin finishes and texturisation.

Speciality fibres: high temperature and flame retardant fibres, elastomeric fibres, Polylactic Acid (PLA) fibre, nano-fibres, metallic fibres-Gold and Silver coated, super-absorbent fibres for medical and hygiene applications.

UNIT III **9**

Short Staple Spinning System (Cotton): Sequence of process in cotton spinning - Ginning-objectives, types, suitability and principle of working; objectives and principles of working of Blow room, Carding, Drawing, Combing, Simplex and spinning systems -Ring spinning and Ringless-Rotor spinning, Air jet spinning and DREF spinning systems).

UNIT IV **9**

Long Staple Spinning System: Sequence of process in woolen and worsted spinning; objectives and principles of Scouring, Drying, Oiling, Dyeing, Blending, Carding, Gilling and Combing, Roving and Spinning (Solo and Compact spinning systems).

UNIT V **9**

Post spinning: Objectives and principles of working of Cone winding, Cheese winding, Reeling, Assembly winder, Ring doubler and Two for one twister (TFO); Single yarn and ply yarn characteristics and their applications. Sewing threads.Package faults (Cones and Hanks) and identification.

Total :45Hrs

TEXT BOOKS

1.Mishra S.P.,"Fibre Science & Technology", New Age International Publishers, 2000.
2.Corbman B.P., "Textiles: Fibre to Fabric", McGraw Hill International Edn,1983.
3. Klien. W. G," The Technology of Short Staple Spinning", The Textile Institute, Manchester, 1988 (five volumes)
4. Mahendra Gowda, R. V, "New Spinning Systems", NCUTE Publication, Second Edition, 2006

REFERENCES

1.Morton, W.E and Hearle, J.W.S., "Physical Properties of Textile Fibres", The Textile Institute, Manchester, U.K., 1993.
2.Muthopadhyay S.K., "Advances in Fibre Science", The Textile Institute, UK 1992.
3.Gupta V.B., "Textile Fibres: Developments and Innovations", Vol. 2, Progress in Textiles: Science & Technology, Edited by V.K. Kothari, IAFL Publications, 2000.
4. Oxtoby E, "Spun Yarn Technology", Butterworth and Co., London, 1991.
5. Chellamani, K. P, Chattopadhyay. D, "Yarns and Technical Textiles" SITRA publication, First Edition, 1999

U13FT*T*202 WEAVING TECHNOLOGY

L	T	P	C
3	0	0	3

Objectives

- Acquire knowledge on basic principles in production of woven and nonwoven fabrics
- Develop skills in creating various woven fabric designs by the acquired knowledge and assess and decide the suitability of weaves or designs for the particular end product.

UNIT - I **9**

Weaving Preparatory: Process Flow – Weaving Preparatory and Weaving. Objectives and working principles of pirn winding, warping (beam and sectional) and sizing. Package defects – cone/cheese. Yarn quality requirements for weaving.

UNIT - II **9**

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

UNIT – III **9**

Shuttleless Weaving - Basic principles of various shuttleless weaving machines – Projectile, Rapier, Air-jet, Water-jet, Multi-phase; productivity and techno-economics of these machines.

UNIT - IV **9**

Process Control in Weaving -Process and quality control measures in pirn winding, cone winding, beam warping, sectional warping, sizing, and weaving. Computerised fabric inspection, Loom data system.

UNIT - V **9**

NON-WOVENS: Definition, classification, types of fibres used, web formation techniques - dry laid, wet laid. Bonding – mechanical, thermal and chemical. Spun bonding, finishing of non wovens and applications of non wovens.

Total: 45hrs

TEXT BOOKS

1.Talukdar, Sriramulu and Ajgaonkar , “Weaving – Machines, Mechanisms, Management” Mahajan Publishers Pvt.Ltd., –1998

2.Grosicki Z., “Watson’s Textile Design and Color: Elementary weaves and figure” Blackwell Science, Commerce Place, 1998.\

REFERENCES

1.Allan Ormerod, Walter S. Sondhelm “Weaving- Technology and Operations”.Textile Institute publications

2.PR. Lord and Mohammed, “Weaving: Conversion of yarn to fabric”, M.H. Merrow Publishing Co Ltd., UK, 1998.

3.Talukdar, “Introduction to winding and warping” Mahajan Publishers Pvt. Ltd.,1998

4.Talukdar, Wadekar and Ajgaonkar, “Sizing – Materials, methods and machines”second edition, Mahajan publishers Pvt. Ltd, 1998.

5.Nisbet H., “Grammer of textile design”, Taraporevala Sons and Co Pvt. Ltd., 1994.

6.Murphy, W.S., “Textile weaving and design”, Abhishek Publications, 2009

U13PH*P*101 / U13PH*P*201 PHYSICS LABORATORY

L	T	P	C
0	0	3	1

List of experiments (I BE / B. Tech)

Any Ten Experiments:

1. Lee's disc – determination of thermal conductivity of a bad conductor
2. Air wedge – determination of thickness of a given specimen.
3. Spectrometer – determination of wavelength of mercury source using grating.
4. Compound pen dulum – determination of acceleration due to gravity.
5. Carey foster bridge – determination of specific resistance of given coil of wire.
6. Viscosity – determination of co-efficient of viscosity of liquid by poiseuille's flow method.
7. Non-uniform bending – determination of Yound's modulus.
8. Iltrasonic interferometer – determination of velocity of sound and compressibility of liquid.
9. Band gap determination of a semiconductor using post office box.
10. Semiconductor laser:
    - Determination of wavelength of laser using grating
    - Particle size determination.
    - Acceptance angle of optical fibre.
11. Torsional pendulum - determination of Rigidity modulus of the wire
12. Field along the axis of a coil – Determination of magnetic moment.

Demonstration experiments :

1. Determination of solar cell parameters
2. Hall effect .
3. Four probe apparatus
4. Animations –(Laser ,Fiber optics and hysteresis curve)

U13FT*P*201 TEXTILE PRODUCTION PROCESS LABORATORY

L	T	P	C
0	0	3	1

1. Study of longitudinal and cross sectional view of natural and synthetic fibres
2. Identification of fibres through flammability test.
3. Identification of fibres through solubility test.
4. Determination of moisture regain of fibres
5. Determination of blend proportions of blends
6. Study of blow room
7. Study of carding
8. Study of Draw frame
9. Study of comber and simplex
10. Study of ring frame and Open end spinning.
11. Study of non automatic and automatic looms
12. Study of knitting machines

Total : 45hrs

U13CS*P*211 COMPUTING LABORATORY

L	T	P	C
0	0	3	1

OBJECTIVES

- To analyze webpage and identify its elements and attributes
- Learn the basic language of the web: HTML.
- Be able to embed social media content into web pages.
- Implement and understand how to get used with MATLAB

List of Experiments

1. Study of HTML tags
2. Design a web page using basic html tags
3. Design a webpage using table tags
4. Design a webpage using forms and frames
5. Design a webpage using list tags
6. Develop a website of your interest(include a minimum of 3 web pages)
7. Study of MATLAB functions
8. Working with matrix operations
9. Working with image arithmetic
    a. Addition of two images
    b. Subtraction of two images
10. Write a Matlab program for the following
    a. Read an image and crop
    b. Read an image and resize
11. Working with Integration and Differentiation
12. Working with graphs

COURSE OUTCOMES

- Acquire knowledge to create web pages using HTML
- Develop skills in analyzing the usability of a web site.
- Develop an attitude to embed social media content into web pages and to understand the basics of MATLAB operations

U13GH*P*201 HUMAN EXCELLENCE - PERSONAL VALUES –II
(Common to all branches of Engineering and Technology)

L	T	P	C
1	0	1	1

UNIT - I

Revision – thought analysis. Definition - desire - refinement of desire – analysis your desire.
summary of practice – desires – precious experience – can I not live without fulfilling this desire? – what would be the effects on myself & others if I attain this desired thing? – is the attainment of this desire in harmony with the law of nature? – is the fulfillment of this desire agreeable to the sentimental feelings of society? – are my personal, physical, mental, financial strength adequate to fulfill this desire? – conclution.

UNIT – II

Definition – anger – anger is inherited – can mankind afford anger? Anger is a destructive emotion – anger spoils our relationship with others – consequences of anger – success through awareness.
Method of neutralization of anger – name of people who I am angry with – relationship – reason for getting angry – my role – previous happenings(experiences) – vow(auto suggestion) .

UNIT – III

Definition - worry – difference between expectations and happenings – factors multiplying worry – inefficiency – fear – to eradications of worries – improving power of thinking – planned work – awareness or consciousness – introspection – worry is a mental – disease – nature's law of cause and effects - worries due to factors beyond our control – how to deal with problems?
Analysis your problems & eradicate worry – problems to be endured – problems to be borne with patience as they will only be solved over time by nature or by society – problems to be ignored – problems to be solved immediately - practice.

UNIT – IV

Introduction – hints & caution – hand exercises – leg exercises – foot reflexology – neuro muscular breathing exercises – kapalapathy – magarasanas I & II - benfits. Introduction – agna meditation – practice - benefits of agna meditation. Introduction – practice – benefits of shanthi meditation.

UNIT – V

Who I am? - Understanding Self – need of a guru with eternal wisdom – body or lif-force or mind or consciousness? – from flower to akash – will the true YOU please step forward? - Who am I? - am I god? - you are infinite – the bottom of the lake – shaping one's destiny – basics – in each dewdrop the same sun.

Total : 30Hrs

SEMESTER III

U13MAT305 PROBABILITY AND APPLIED STATISTICS

L	T	P	C
3	1	0	4

Course Objectives

- Have a fundamental knowledge of statistical measures of central tendency and dispersion
- Have knowledge of basic probability concepts and random variables.
- Know about certain standard distributions.
- Test hypothesis regarding large samples and small samples
- Know about design of experiments and quality control

Course Outcomes

By studying Probability and Applied Statistics students can be able to

- Compute measures of central tendencies, dispersions and correlate the variables.
- Analyze random or unpredictable experiments and investigate important features of random experiments.
- Construct probabilistic models for observed phenomena through distributions which play an important role in many engineering applications.
- Analyze sample data and interpret the same for population.
- Sketch the control charts and outline the process capability.

Course Content

STATISTICAL MEASURES **5 Hours**

Measures of central tendency: Mean, Median and Mode – Measures of variation: Range, Mean deviation, standard deviation and coefficient of variation.

CORRELATION AND REGRESSION **4 Hours**

Karl Pearson's coefficient of correlation – Spearman's Rank Correlation – Regression lines.

PROBABILITY AND RANDOM VARIABLE **9 Hours**

Axioms of probability - Conditional probability – Total probability – Baye's theorem - Random variable – Distribution function – properties – Probability mass function – Probability density function – moments and moment generating function – properties.

STANDARD DISTRIBUTIONS **9 Hours**

Binomial, Poisson and Normal distributions – Moments, Moment Generating functions and properties for the above distributions - Fitting of Binomial, Poisson and Normal distributions.

TESTING OF HYPOTHESIS **9 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 **4 Hours**

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

STATISTICAL QUALITY CONTROL **5 Hours**

Concept of process control - Control charts for variables – $\overline{X}$, R – charts – Control charts for attributes – p, np, c – charts – Tolerance limits.

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

REFERENCES

1. Veerarajan T., "Probability and Statistics", Tata McGraw-Hill, New Delhi, 2007 & 2nd Reprint 2004.
2. Gupta S. P, "Statistical Methods", Sultan Chand & Sons Publishers, 2004.
3. Johnson R. A., "Miller & Freund's Probability and Statistics for Engineers", Sixth Edition, Pearson Education, Delhi, 2000.
4. Gupta S.C, and Kapur, J.N., "Fundamentals of Mathematical Statistics", Sultan Chand, Ninth Edition, New Delhi, 1996.
5. Walpole R. E., Myers S.L. & Keying Ye, "Probability and Statistics for Engineers and Scientists", Pearson Education Inc, 2002.

U13FT*7*301 CONCEPTS OF FASHION AND DESIGN

Course Objectives

L	T	P	C
3	0	0	3

- To educate on the principles and concepts of design and fashion designing.
- To impart knowledge on the historic costumes and textiles.

Course Outcomes

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

- Acquire knowledge on elements & principles of design in context to apparels
- Acquire knowledge on color basics, dimensions, categories and their characteristics
- Ability to understand the dynamics of fashion and the role of fashion designers
- Acquire knowledge on the fashion forecasting processs
- Appreciate the significance of a fashion portfolio
- Acquire knowledge on the significant traditional world costumes and Traditional textiles of India

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.

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, British medieval period and 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.

Total: 45 Hours

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.B Tataporevala Sons and Co. Ltd., 1982.
4. Churye G.S, “Indian Costume”, Popular Prakashan Pvt. Ltd., Bombay, 1995.
5. Hatanaka Kokyo Collection –“Textile arts of India”, Chronide Books, 1996
6. Elaine Stone, Jean A. Samples, “ Fashion Merchandising” McGraw-Hill Book Company 1985.
7. Russel Gillow 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.

U13FTT302 KNITTING TECHNOLOGY

L	T	P	C
3	0	0	3

Course Objectives

- To emulate information on the knitted fabric production processes
- To educate on the structure and characteristics of various knitted fabrics

Course Outcomes

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

- Recognize the weft knitted fabric production processes
- Outline the structure and properties of various weft knitted fabrics
- Acquire know ledge on the structure and properties of various advanced weft knitted fabrics
- Recognize the structure ,properties ,applications and Latest developments in warp knitting
- Acquire knowledge on the application of knitted structures for Technical Textiles

Course Contents

PRINCIPLE OF WEFT KNITTING: 9 Hours

Comparison of Weaving and Knitting- Terms and definitions in weft knitting. - Knitting elements-Needles and its types, sinker, cam. Knitting action of latch, bearded and compound needles. - Classifications of weft knitting machines. Parts and functions of Plain, circular rib, and interlock machine. - 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 lock structure, 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

WARP KNITTING: 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, blind lap, tricot, inlay, satin and atlas stitches. – Basic Tricot Warp Knit Structures full tricot, 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

KNITTED STRUCTURES FOR TECHNICAL TEXTILES: 9 Hours

Different Application segments in Technical textiles-Weft knitted structures for technical textiles -application of Weft knitted structures for different end uses in technical textiles -Warp knitted structures for technical textiles -application of Warp knitted structures for different end uses in, Geo Textiles, Medical textiles, Automotive, Sports and, Industrial textiles

Total: 45 Hours

REFERENCES

1. Ajgaonkar D B, “Principles of Knitting”, Universal Publishing Corporation, 1998.
2. Anbumani N, “Knitting – Fundamentals, Machines, Structures and Developments”, New Age International Publishers, 2007.
3. David Spencer., “Knitting Technology”, Pergamon Press, Oxford 2005.
4. Pradip V Mehta, “Introduction to Quality Control for the Apparel Industry”, ASQC Quality Press, 1992.

U13FT*7*303 BASIC GARMENT TECHNOLOGY

L	T	P	C
3	1	0	4

Course Objectives

- To describe the federal classification of stitches and seams and educate the quality parameters of stitches, seams and garment details.
- To acquire knowledge on the types, classifications, patterning and construction of various garment details.
- To recognize the suitability of garment components and selection factors for different garment styles.

Course Outcomes

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

- Describe the federal classification of stitches & seams, seam finishes, stitch and seam defects.
- Define and classify the different types of garment components.
- Identify and construct the different types of garment components using suitable construction techniques.
- Recognize the suitability of garment components and selection factors for different garment styles.

Course Contents

9+3 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+3 Hours

FULLNESS: Definition, types- Darts – single, double pointed darts, Tucks - pin tucks, cross tucks, piped tucks, shell tucks. Pleats- knife pleats, box pleats, invertible box pleats, Kick pleats. Flare, godets, gathers, 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+3 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+3 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+3 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 Hours **Tutorial: 15 Hours** **Total: 60 Hours**

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.

U13FT*7*304 PATTERN ENGINEERING

L	T	P	C
3	1	0	4

Course Objectives

- To impart knowledge on the basic techniques used for preparing garment patterns.
- To acquire knowledge on flat pattern techniques.
- To gain knowledge on grading and pattern alteration methods

Course Outcomes

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

- Define and classify the patterns and memorize the steps involved in taking body measurement
- Prepare the basic block patterns for men, women and kids wear based on the principles and methodologies of drafting
- Prepare patterns for basic blocks and garment components using draping techniques
- Apply dart manipulation techniques to design, variation in garment components.
- Acquire knowledge on the techniques involved in pattern alteration and grading for various body measurements

Course Contents

BASIC PATTERN MAKING: 9+3 Hours

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+3 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+3 Hours

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

FLAT PATTERN TECHNIQUES: 9+3 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.

PATTERN ALTERATION: 7+2 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: 5+ 1 Hours

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

Theory: 45 Hours Tutorial: 15 Hours Total: 60 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; Kundel Carlyn, “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.

U13EET211/ U13EET311 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

L	T	P	C
3	0	0	3

Course Objectives

- Quantitative treatment of the subject with only theory and no problems.

Course Outcomes

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

- The learners will acquire the knowledge of fundamental laws of electrical and electronics engineering.
- The students can state the definition of magnetic circuits.
- Students can choose suitable motor for desired application.
- The students have the ability to apply the fundamental laws of magnetic circuits to electrical machines.
- The learners can verify the truth table of digital logic gates.

Course Contents

ELECTRIC CIRCUITS FUNDEMENTALS: 9 Hours

Electric current and Ohm's law – Resistance and Resistivity – Relation between Voltages, Current, Resistance and Power - Capacitance – Parallel plate capacitor – Energy stored in a capacitor.

ELECTROMAGNETISM: 9 Hours

Magnetic field - Field intensity, magnetic flux , Flux density – Permeability – Magnetic effects of electric current – Magnetic circuit – Faraday's laws of Electromagnetic Induction – Self-inductance and Mutual inductance – Energy stored in magnetic field – Magnetic Hysteresis.

AC-CIRCUITS: 9 Hours

Alternating voltages and current – Sinusoidal waveform – cycle and frequency – RMS value – vector diagram of sine waves of same frequency – Alternating current through Resistance, Inductance and Capacitance – current through series circuits – Power factor – Active and Reactive power – Generation of three phase voltage – Voltages, Currents and Power in Star and Delta connected loads.

ELECTRICAL MACHINES (Qualitative Treatment Only): 9 Hours

DC motor – Principle of operation – Back-emf and voltage equation – Torque and speed Characteristics of Series and Shunt connected motors – Transformer – Ideal Transformer relationship – Three phase induction motor – Cage rotor and Wound rotor – Principle of operation – Slip – Torque – Slip characteristics – Single phase induction motors.

ELECTRONIC CIRCUITS: 9 Hours

Semiconductor diode – Half wave and Full wave rectifier – Bipolar Polar Junction transistors – circuit configurations – static characteristics – load line and biasing – simple introduction to amplifiers – Introduction to Binary logic gates – AND, OR, NOT, NAND, NOR, EX-OR & EX-NOR.

Total: 45 Hours

REFERENCES

1. B.L. Theraja, “Fundamentals of Electrical Engineering and Electronics”, S. Chand Publishing, 2012.
2. Thomas L Floyd, “Electronic Devices”, 6th edition, pearson education, 2003.
3. Muthusubramanian.R, Salivahanan.S and Muraleedharan. K.A, “Basic Electrical Electronics and Computer Engineering”, Tata Mcgraw Hill, second edition, 2006.
4. Thyagarajan.T, Sendur Chelvi .K.P, Rangaswamy T.R, “Engineering Basics”, Revised second edition, New Age International P. Ltd publisher.

U13FT*P*301 FASHION DESIGN LABORATORY – I

L	T	P	C
0	0	3	1

Course Objectives

- To impart knowledge on basic skills in fashion illustration
- To teach the basics on color concepts and human anatomy

Course Outcomes

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

- Acquire knowledge on basic drawing and techniques defining.
- Acquire knowledge on color basics, dimensions and categories and prepare various color swatches
- Ability to illustrate various garment components, accessories & human anatomy drawings.
- Acquire skills to illustrate croquis

Course Content

LIST OF EXPERIMENTS:

1. Basic Drawing Tools and Techniques, Study of different types of lines and strokes, object Drawing, Shading concepts, Drape of fabrics and shading with different mediums.
2. Introduction to colour - Dimensions of colour- Studying different kinds of colour- Theories and Colour Harmonies -Preparing small Swatches for different colour theories.
3. Motif Development – Design Repeat and positioning, Rendering prints and textures with various fabric constructions (wovens, non-wovens and knit)
4. Drawing different Silhouettes and garment components - sleeves, collars, necklines, cuffs, skirts, pants
5. Human Anatomy- Figure basics, Constant proportions, Shapes and parts of human body. Figure Construction, Skeleton figure, Study of different postures - Head- Face, Eyes, Lips, Nose, Hand - Fingers, Leg - Feet and Toes, Hand and Arms.
6. Normal Drawing - Eight head theory. Drawing croqui figures-stick, geometric, flesh- 7 ½, 8 ½ and 10 head figures.
7. Fashion Figure Drawing - Drawing croqui figures-stick, geometric, flesh - 7 ½, 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. Difference between normal and fashion figure.
9. Drawing croqui figures using template, model, imagination and photograph.
10. Application of garments on flesh croqui figures.

Total: 45 Hours

U13FT*P*302 BASIC GARMENT TECHNOLOGY LABORATORY

L	T	P	C
0	0	3	1

Course Objectives

- To impart skills on constructing basic garment details

Course Outcomes

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

- Acquire knowledge on operating SNLS machine and construction of garment components.
- Develop patterns using measurements for various garment components.
- Prepare garment components using suitable construction technique.

Course Content

LIST OF EXPERIMENTS

1. Identification of machine parts and functions of Single Needle Lock Stitch (SNLS) machines. Preparing samples for various SPIs and thread tension
2. Preparing samples for basic Hand stitches.
3. Preparing samples for seams
4. Preparing samples for seam finish.
5. Preparing samples for Darts and fullness.
6. Preparing samples for plackets – continuous bound placket, 2 piece placket, tailors placket, Fly opening and Zipper.
7. Preparing samples for Necklines – Bias facing, Bias Binding and Fitted facing.
8. Preparing samples for collars – Peter Pan collar, Full shirt collar, Shawl collar.
9. Preparing samples for pockets – Patch Pocket, Bound Pocket and Front Hip Pocket.
10. Preparing samples for Sleeves – Plain, Puff, Raglan, Kimono, Cap Sleeve

Total: 45 Hours

U13EEP211/ U13EEP311 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING LAB

L	T	P	C
0	0	3	1

Course Objectives

- To experimentally verify the principle of operation, performance characteristics of DC Motors and AC Motors.
- To obtain the characteristics of electronic devices

Course Outcomes

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

- Understand and verify the breadboard connections.
- Check the working condition of a cathode ray oscilloscope.
- Understand the basic laws of electric circuits.
- Understand the working of various electronic devices.
- Understand the performance of an amplifier to carryout different operations.

Course Content

LIST OF EXPERIMENTS:

1. Load Test on DC Shunt Motor
2. Load Test on DC Series Motor
3. Speed Control of DC Shunt Motor
4. Load Test on 3 Phase Induction Motor
5. Load Test on 1 Phase Induction Motor
6. Load Test on single phase transformer
7. Half wave and full wave rectifier
8. Characteristics of CE transistor configuration
9. Characteristics of PN diode
10. Verification of truth table of logic gates

Total: 45 Hours

U13GHP301 HUMAN EXCELLENCE – FAMILY VALUES

(Common to all branches of Engineering and Technology)

L	T	P	C
1	0	1	1

Course Objectives

- To inculcate the basic need for family life and peace in it.
- To lead spiritual development through good family life.
- To respect womanhood and live disease free life.
- To live with sound health.
- To reach Intuition.

Course Outcomes

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

- Develop skills in maintaining harmony among the family members.
- Acquire skills in traditional yogasanas leading to sound health.
- Behaves as a family member and leading to a blissful family life.
- Learnt Food is Medicine.

Course Content

RESTRAINT IN FAMILY: 4 Hours

Definition - Greatness of life force & mind. Introduction - Kayakalpa yoga -aim - maintaining youthfulness – sex & spirituality – ten stage of mind – mental frequency-method of concentration – kayakalpa philosophy - physical body – sexual vital fluid – life force – bio-magnetism - mind – food transformation into seven minerals – postponing the ageing process – death – importance of kayakalpa training.

SPIRITUAL DEVELOPMENT THROUGH GOOD FAMILY LIFE 4 Hours

Kayakalpa exercise – methods –aswinimudhra – ojus breathing – explanations – benefits – practices – Responsibility of men and women – introduction a good Education – need of morality – spiritual development.Revision of previous physical exercises. Introduction – hints & caution – body massaging – accu-pressure –relaxation.

PEACE IN FAMILY 4 Hours

Family value – meaning – Introduction – values – benefits of blessings – effect of vibrations – make blessings a daily habit – greatness of friendship – individual & family peace – reason for misunderstanding in the family – no comment – no command – no demand – no ego – peace of mind.

GREATNESS OF WOMANHOOD & FOOD IS MEDICINE 4 Hours

Good–cultured behavioral patterns – love and compassion - Greatness of womanhood – Food is medicine (healthy food habits)

SIMPLIFIED PHYSICAL EXERCISES 7 Hours

Simplified physical exercises – Kaya Kalpa Yoga (Benefits related to the Patient, Tolerance, Sacrifice)

MEDITATION & YOGASANAS 7 Hours

Thuriya meditation – introduction – practice – benefits. Asanas– ashtanga yoga – pathanjali maharishi –hints & cautions – posture - movement – involvement – standing asanas: thadasana – ekapathasana – chakrasana(side) – uthkatasana – trikonasana. Sittingasanas: thandasana – padmasana – vajrasana – suhasana – siddhasana – parvathasana – yogamudhra.Downward lying asanas: makkarasana – bhujangasana – salabhasana –navukasana– dhanurasana. Upward lying asanas: savasana - arthapavanamukthasana– pavanamukthasana – utthanapathasana – navasana& Surya namaskara. **Total: 30 Hours**

SEMESTER IV

U13MAT401 NUMERICAL METHODS

(COMMON TO CE, ME, MCE, EEE, AE, AUE, TXT, FT & EIE)

L	T	P	C
3	1	0	4

Course Objectives

On completion of the course, the students are expected

- To solve algebraic, transcendental and system of linear equations by using various techniques.
- To understand the concepts of interpolation with equal and unequal intervals.
- To understand the concepts of numerical differentiation and numerical integral by various methods.
- To solve the ordinary differential equation with initial condition by numerical techniques.

Course Outcomes

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

- Solve a set of algebraic equations representing steady state models formed in engineering problems
- Fit smooth curves for the discrete data connected to each other or to use interpolation methods over these data tables
- Find the trend information from discrete data set through numerical differentiation and summary information through numerical integration
- Predict the system dynamic behaviour through solution of ODEs modeling the system
- Solve PDE models representing spatial and temporal variations in physical systems through numerical methods.
- Have the necessary proficiency of using MATLAB for obtaining the above solutions.

Course Content

INTRODUCTION: 2 Hours

Simple mathematical modeling and engineering problem solving – Algorithm Design – Flow charting and pseudocode - Accuracy and precision – round off errors

NUMERICAL SOLUTION OF ALGEBRAIC EQUATIONS: 7 Hours

Solution of nonlinear equations - False position method – Fixed point iteration – Newton Raphson method for a single equation and a set of non- linear equations

Solution of linear system of equations by Gaussian elimination, Gauss Jordan method - Gauss Seidel method.

CURVE FITTING AND INTERPOLATION: 7 Hours

Curve fitting – Method of least squares – Regression Analysis - Newton's forward and backward difference formulas – Divided differences – Newton's divided difference formula - Lagrange's interpolation – Inverse interpolation.

NUMERICAL DIFFERENTIATION AND INTEGRATION: 6 Hours

Numerical differentiation by using Newton's forward, backward and divided differences – Numerical integration by Trapezoidal and Simpson's 1/3 and 3/8 rules – Numerical double integration.

NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS: 10 Hours

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

NUMERICAL SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS (PDEs): 13 Hours

PDEs and Engineering Practice – Laplace Equation derivation for steady heat conduction – Numerical solution of the above problem by finite difference schemes – Parabolic Equations from

Fourier`s Law of Transient Heat Conduction and their solution through implicit schemes – Method of Lines – Wave propagation through hyperbolic equations and solution by explicit method.
Use of MATLAB Programs to workout solutions for all the problems of interest in the above topics.

Theory: 45 Hrs **Tutorial: 15 Hrs** **Total: 60 Hrs**

REFERENCES

1. Steven C.Chapra and Raymond P. Canale, " Numerical Methods for Engineers with Programming and Software Applications", SixthEdition, WCB/McGraw-Hill, 1998.
2. John H. Mathews and Kurtis D. Fink, "Numerical Methods using Matlab", Fourth Edition, Prentice Hall of India, 2004.
3. Gerald C. F. and Wheatley P.O, "Applied Numerical Analysis", Sixth Edition, Pearson Education Asia, New Delhi, 2002.
4. Sastry S.S, "Introductory Methods of Numerical Analysis", Third Edition, Prentice – Hall of India Pvt Ltd, New Delhi, 2003.
5. Kandasamy P., Thilagavathy K. and Gunavathy K., "Numerical Methods", S.Chand Co. Ltd., New Delhi, 2007.

U13GST001 ENVIRONMENTAL SCIENCE AND ENGINEERING

(Common for III Semester EEE, IT, CSE & IV Semester, TXT, FT, BIO, MCE, CIVIL, ME)

L	T	P	C
3	0	0	3

Course Objectives

- At the end of this course the student is expected to understand what constitutes the environment, what are precious resources in the environment, how to conserve these resources, what is the role of a human being in maintaining a clean environment and useful environment for the future generations and how to maintain ecological balance and preserve bio-diversity.

Course Outcomes

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

- Classifies the various resources of environment and describes the importance of conservation
- Explains the concept of ecosystem and biodiversity
- Differentiates the different types of pollution and role of individual in its prevention.
- Expresses the issues related to environmental degradation and its preservation.

Course Content

INTRODUCTION TO ENVIRONMENTAL STUDIES AND NATURAL RESOURCES: 10 Hours

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 over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – 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, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – Role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles.

ECOSYSTEMS AND BIODIVERSITY: 14 Hours

Concept of an ecosystem – Structure and function of an ecosystem – Producers, consumers and decomposers – Energy flow in the ecosystem – Ecological succession – Food chains, food webs and ecological pyramids – 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) – Introduction to Biodiversity – Definition: genetic, species and ecosystem diversity – Bio geographical classification of India – Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, National and local levels – India as a mega- diversity nation – Hot-spots of biodiversity – Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – Endangered and endemic species of India – Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

ENVIRONMENTAL POLLUTION: 8

Definition – Causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – Soil waste Management: Causes, effects and control measures of urban and industrial wastes – Role of an individual in prevention of pollution – Pollution case studies – Disaster management: floods, earthquake, cyclone and landslides.

SOCIAL ISSUES AND THE ENVIRONMENT: 7 Hours

From Unsustainable to Sustainable development – Urban problems related to energy – Water conservation, rain water harvesting, watershed management – Resettlement and rehabilitation of people; its problems and concerns, case studies – Environmental ethics: Issues and possible solutions – Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. – Wasteland reclamation – Consumerism and waste products – Environment Production Act – Air (Prevention and Control of Pollution) Act – Water (Prevention and control of Pollution) Act – Wildlife Protection Act – Forest Conservation Act – Issues involved in enforcement of environmental legislation – Public awareness.

HUMAN POPULATION AND THE ENVIRONMENT: 6 Hours

Population growth, variation among nations – Population explosion – Family Welfare Programme – Environment and human health – Human Rights – Value Education – HIV / AIDS – Women and Child Welfare – Role of Information Technology in Environment and human health – Case studies.

FIELD WORK

Visit to local area to document environmental assets- river / grassland / hill / mountain, visit to local polluted site- urban / rural / industrial / agricultural, study of common plants, insects, birds, study of simple ecosystems-pond, river, hill slopes etc.,

Total: 45 Hours

REFERENCES

1. Deswal.S and Deswal.A, " A basic course in Environmental studies" Dhanpat Rai & Co, 2006.
2. Gilbert M.Masters, Introduction to Environmental Engineering and Science, Pearson Education Pvt., Ltd., Second Edition, ISBN 81-297-0277-0, 2004.
3. Miller T.G. Jr., Environmental Science – Sustaining the earth, Wadsworth Publishing Co., 1993
4. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad India., 2002
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, T.H.Gorhani, Environmental Encyclopedia, Jaico Publ., House, Mumbai, 2001.
7. Wager K.D., Environmental Management, W.B. Saunders Co., Philadelphia, USA, 1998.
8. Townsend C., Harper J and Michael Begon, "Essentials of Ecology", Blackwell science Publishing Co., 2003
9. Trivedi R.K and P.K.Goel "Introduction to Air pollution" Techno-science Pubications. 2003
10. Yamuna R.T "Environmental Science" Inter Publications, 2008

U13FT*7*401 APPAREL PRODUCTION TECHNOLOGY

L	T	P	C
3	1	0	4

Course Objectives

- To educate on the steps involved in garment production.
- To teach the techniques involved in finishing and packing of garments.

Course Outcomes

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

- Acquire knowledge on the processes involved in apparel production and preparation of spec sheet
- Recognize the properties and characteristics of raw material for apparel manufacture
- Gain knowledge in pattern layout planning and preparation of construction flow for apparel production
- Identify the problems of fit and indicate remedies
- Acquire knowledge on apparel finishing processes

Course Content

PROTO SAMPLES & SPEC SHEETS: 9+3 Hours

Apparel production process- flow process. Analyzing specification sheet- sample preparation and approval. Preparation of specification sheet for children's frock, ladies top, and men's trousers- working diagrams, seam and stitch specification and size chart. Preparation of proto pattern and developing production pattern.

RAW MATERIAL SELECTION: 9+3 Hours

Factors affecting selection of fabric- precautions while handling different fabrics while laying, marking, cutting and sewing. Sewing Thread properties and seam performance –seam strength , seam elasticity, sewing problems.

Components- label, linings, Interlining, Elastic, shoulder pads, Seam binding and tape – performance properties of the above components.

PATTERN LAYOUT PLANNING: 9+3 Hours

Importance of grain in garments, principles and types of layout, transferring patterns on fabrics. Listing garment components and planning the construction process flow for children's frock, ladies top, and men's trousers

FITTING: 9+3 Hours

Standards of good fit - ease, line, grain, set, balance. Steps in assembling a blouse and checking fit. Solving fitting problems in Top, skirt, trouser by pattern alteration.

APPAREL FINISHING PROCESS: 9+3 Hours

Fusing and pressing- definition, process, requirements, equipments and methods. Packing- Function, types of package forms, Types of packaging materials, packaging methods, packing shipping equipments.

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

REFERENCES

1. Harold Carr and Barbara Latham, "The Technology of Clothing Manufacture", Om Book Service, 2002.
2. Jacob Solinger, "Apparel Production Handbook", Reinhold Publications, 1998.
3. Laing R.M., Webster J, "Stitches and Seams", The Textile Institute, Manchester, 2004.

4. Gerry Cooklin, “Garment Technology for Fashion Designers”, Blackwell Science Ltd., 2001.
5. Claire Shaeffer, “Sewing for Apparel Industry”, Prentice Hall, 2000
6. Mary Mathews, “Practical Clothing Construction, Part I and II”, Paperback Ed., Madras, 2000
7. Joseph. H and Amstrong, “Pattern Making for Fashion Design”, Pearson Education Inc, 2005
8. Fan.J., Yu.W., and Hunter.L., “Clothing Appearance and Fit: Science and Technology”, The Textile Institute, Manchester 2004.
9. Leila Aitken.,“Step By Step Dress Making Course“, BBC Books,2004.
10. Ruth E Glock and Grace I Kunz, “Apparel Manufacturing - Sewn Product Analysis”, Prentice Hall, New Jersey, Fourth Edition, 2005

U13FTT402 APPAREL MACHINERY AND EQUIPMENT

L	T	P	C
3	0	0	3

Course Objectives

- To impart knowledge on the machineries and equipments used for garment production
- To instruct on latest developments in the garment production machineries.

Course Outcomes

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

- Acquire knowledge in different methods of spreading of fabrics with respect to type of fabric and to calculate the marker efficiency.
- Describe the basic principles of working of different types of cutting machineries used in apparel production
- Develop skill in setting and adjustment parts of sewing machines
- Develop skills for recognize various parts and their working principles in advanced garment sewing machines.
- Acquire knowledge on special machineries used in apparel production

Course Content

SPREADING MACHINES: 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.

CUTTING MACHINES: 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. Computerised cutting machines. Maintenance of cutting machines. Common defects in cutting and their remedies. Latest Developments.

SEWING MACHINE- SNLS: 10 Hours

Basic parts of sewing machine –primary and auxiliary parts and their functions. Bobbin case / Bobbin hook, Throat plate– Take up 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 THREAD SEWING 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 PURPOSE SEWING 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.

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 DeCosse 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.

U13FT*T*403 FABRIC STRUCTURE AND DESIGN

L	T	P	C
3	1	0	4

Course Objectives

- Acquire knowledge in on various fabric structures / designs and their variations .
- Develop skills to create design, draft and peg plan for different types of fabrics

Course Outcomes

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

- Outline the objectives and working principles of various weaving preparatory processes.
- Describe the working principle of conventional and modern looms available for fabric manufacture.
- Acquire knowledge on the elements of woven fabric design and the elementary fabric structures and their properties.
- Apply the knowledge on elementary fabric structures for the development of modified weaves and complex woven fabric structures, and describe the properties of woven fabrics.

Course Content

BASIC WEAVES: 12 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+3 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+3 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+3 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+3 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 Hours **Tutorial: 15 Hours** **Total: 60 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

U13MET407 BASICS OF MECHANICAL ENGINEERING

L	T	P	C
3	0	0	3

Course Objectives

- To understand the basic concepts of thermo dynamics
- To gain knowledge about renewable energy and its applications
- To know the working principles of internal combustion engines
- To study the different applications of drives

Course Outcomes

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

- Acquire knowledge on principles of thermodynamics, renewable energy and power plants
- Acquire knowledge on IC engines and air conditioning and refrigeration.
- Acquire knowledge on manufacturing processes and power transmission
- Gain knowledge about basic manufacturing process
- Acquire knowledge in power transmission

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.

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.

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
5. James Brown, “Advanced Machining Technology Handbook”, McGraw Hill, New York,1998

U13FT*P*401 FASHION DESIGN LABORATORY – II

L	T	P	C
0	0	3	1

Course Objectives

- To impart knowledge on basic skills in preparing digital fashion designs
- To impart knowledge on preparing textile designs using textile design software

Course Outcomes

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

- Demonstrate skill on tools of fashion designing software to prepare digital apparel designs.
- Sketch apparel designs using designing software.
- Appreciate significance of communicating informative graphics all through apparel production process

Course Content

LIST OF EXPERIMENTS

1. Introduction of tools and features in Adobe Photoshop
2. Introduction of tools and features in Adobe Illustrator/Corel Draw
3. Creating a Woven and Print design in Adobe Photoshop
4. Creating a mood board and a color board based on a theme
5. Preparation of digital designs for children's wear and accessories
6. Preparation of digital designs for women's wear and accessories
7. Preparation of digital designs for men's wear and accessories
8. Introduction to tools and features in Lectra-Kaliedo software
9. Development of checked, striped and plaid woven designs in Lectra-Kaliedo software
10. Development of Jacquard woven designs in Lectra-Kaliedo software

Total: 45 Hours

U13FTP402 APPAREL MACHINERY LABORATORY

L	T	P	C
0	0	3	1

Course Objectives

- To impart skills on operating various sewing machines
- To teach the basics on maintaining the quality of sewing in various sewing machines

Course Outcomes

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

1. Determine appropriate sewing parameters for any desired quality of stitching of apparels
2. Apply skills in identifying the procedure for preparing the specified quality of stitching by selecting the required sewing parameters
3. Demonstrate skill to troubleshoot when faulty stitches occur.

Course Content

LIST OF EXPERIMENTS

1. Determination of Threading path and Stitches per inch in single Needle Lock Stitch Machine.
2. Adjustment of needle height, feed dog height and feed dog angle in single needle lock stitch machine
3. Determination of Threading path and stitches per in inch in over lock stitch machine.
4. Adjustment of needle thread and Looper thread tension and feed ratio in over lock stitch machine.
5. Determination of Threading path and stitches per inch in Flat lock stitch machine.
6. Adjustment of needle thread and Looper thread tension and feed ratio in Flat lock stitch machine.
7. Adjustments in button sewing machine for button hole type, size of button
8. Adjustments in Button Holing machine for type of button hole, stitches per inch
9. Adjustments in Feed off the arm Machine.
10. Adjustments in Flat lock elastic attaching machine
11. Adjustments in Electronic Zig – Zag Sewing machine.
12. Adjustment in bar tacking machine

Total: 45Hours

U13FT*P*403 FABRIC STRUCTURE AND DESIGN ANALYSIS LABORATORY

L	T	P	C
0	0	3	1

Course Objectives

- To acquire knowledge on different fabric weave designs and its characteristics.
- To analyze the different fabric structures and its parameters.
- To identify the fabric with its commercial name by fabric appreciation.

Course Outcomes

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

- Acquiring knowledge on Designs of fabrics
- Analysis and Identification of fabric designs and its commercial name by fabric feel.
- Analyze and calculate the fabric particulars and parameters to understand the fabric structure
- Identifying the machinery requirements for the production of analyzed fabric designs

Course Content

LIST OF EXPERIMENTS

1. Analysis of fabrics – Commercial name & fabric appreciation

Woven Fabric Analysis

2. Plain and Twill
3. Satin and Sateen
4. Huck a back, Honey comb
5. Extra figured weaves
6. Jacquard design
7. Double cloth
8. Pile fabric –Terry weave

Knitted fabric analysis

9. Single Jersey
10. Rib

Total: 45 Hours

U13GHP401 HUMAN EXCELLENCE – PROFESSIONAL VALUES

L	T	P	C
1	0	1	1

(Common to all branches of Engineering and Technology)

Course Objective

- To know the 5 Cs (Clarity,courage,confidence,commitment,compassion)
- To Know the 5 Es(Energy, Enthusiasm, Eefficiency,Enterprise'Excellence)
- To Practice the IQ Questions and given to the result
- To Learn about Professional Ethics
- To know the examples for Self Control

Course Outcomes

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

- Aquire knowledge on the Clarity, courage, confidence, commitment, compassion for a good Professionalize.
- Demonstrate Skills of IQ test
- Contribute to the better Management of Time
- Behave as a good Professional from Quality Enhancement

Course Content

PERSONALITY CONCEPTS - 5C'S & 5E'S: **5 Hours**

Personality-concepts, definition,-types of personality-personality development activities- how to develop a good personality factors affecting personality development tools of improve personality-steps to a dynamic personality-5 C's and 5 E's

TIME MANAGEMENT: **5 Hours**

Self-development – importance of self development – how to develop oneself – continuous learning – laser focus +persistence – working a plan – sound mind follows sound body –complete responsibility – practice – those who make it, made it – never give-up – meditation – ten commandments of self development – self control technique for teenagers.

LEADERSHIP TRAIT: **5 Hours**

Leadership traits – style – factors of leadership – principles of leadership - time management – importance of time management – benefits – top five time sucks of the average Human – time management for college students. Passion for excellence – what is passion? – Why passion? – Value of life – index of life – fuel for fulfillment – secret of physical & spiritual fitness – improves learning ability.

EMPOWERMENT OF MIND **5 Hours**

IQ, - Factors affecting the intelligence quotient – IQ and the brain – sex – race – age – relationship between IQ & intelligence – how to develop good intelligence quotient power – exercise can improve IQ – food plan to increase IQ – meditation – reading – playing – try right with opposite hands – learn new things - the IQ tests. EQ – emotional Intelligence – list positive & negative emotions. SQ – spiritual quotients – definition – basic science of spiritual quotient – how to build SQ? – Relationship between IQ, EQ, SQ.

SIMPLIFIED PHYSICAL EXERCISE & YOGASANAS & MEDITATION **10 Hours**

Panchendhriya meditation – Introduction – practice – benefits. Asanas – revision of previous asanas – standing asanas: natarasana – virabhadrasana – pathangusthasana – ardhachandrasana – utthithatrikonasana – parsvakonasana.

Total: 30 Hours

SEMESTER V

U13FT*T* 501 FASHION APPAREL DESIGN AND DEVELOPMENT

L	T	P	C
3	1	0	4

Course Objectives

- To gain knowledge on apparel design development and construction techniques
- To learn methods of production sequence for children's, women's and men's wear

Course Outcomes

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

- Acquire knowledge on basic principles in designing and developing garment patterns.
- Developing skills in preparation of garments by implementing the various measurements, pattern development and construction methods for children's, women's and men's garments.
- Trace the knowledge on the different varieties of woven and knitted garments.
- Assess the suitability of garment patterns, fabrics, seams to fit the individuals.

Course 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 – baba suit, romper, baby frock.

WOMEN'S WOVEN WEAR: 11+3 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 – salwar kameez, skirts - plain, gored, pleated and blouses - saree blouse, skirt blouse, katori blouse.

WOMEN'S KNIT WEAR: 9+3 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

MEN'S WOVEN WEAR: 10+5 Hours

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

MEN'S KNIT WEAR: 7+2 Hours

Designing and pattern development – measurements – standard size charts formen's knitwear. Step-by-step garment drafting procedure and construction sequence – T-shirt, elastic shorts and briefs.

Theory: 45 Hours **Tutorial: 15 Hours** **Total: 60 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, Pennsylvenia, 1997.
8. “The Complete Book of Sewing”, DK Publishers, London, 1996.
9. Mary Mathews, “Practical Clothing Construction” Part I and II, 2003.
10. Raul Jewel, “Encyclopedia of Dress Making”, APH Publishing Corporation, New Delhi, 2000.
11. Zarapkar.K.R,” Zarapkar system of cutting” Navneet publications ltd, Mumbai, 2010.

U13FT*7*502 SURFACE ORNAMENTATION AND ACCESSORIES

L	T	P	C
3	1	0	4

Course Objectives

- To gain knowledge types and working methods of hand, machine and computerized embroidery.
- To impart knowledge on types and production methods of fashion accessories.

Course Outcomes

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

- Acquire knowledge in classification and parameters for raw materials and tools for surface ornamentation
- Classify and identify different hand embroidery stitches and traditional embroidery
- Recognize and identify the machine embroidery types and processes
- Understand the embroidery production processes and quality parameters in computerized embroidery
- Acquire knowledge on types of accessories and its production processes

Course Content

INTRODUCTION: **7+2 Hours**

Embroidery – 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.

HAND EMBROIDERY: **10+4 Hours**

Hand embroidery stitches - classification - running, couching, button hole, satin, long and short, wheat, chain, stem, herringbone, cross stitch, knotted stitches, fish bone. Indian traditional embroideries – Phulkari, Kasuti, Kashida, Kutch work, Chikkankari, Kantha, Tribal embroidery stitches, designs, colors and materials used.

MACHINE EMBROIDERIES AND SURFACE ORNAMENTATION: **10+4 Hours**

Machine Embroideries and Surface ornamentation – types - eyelet work, cutwork, lace work, drawn thread work, drawn fabric work, patch work, mirror work, applique, shaded embroidery, shadow work, badala work, bead and sequins work and bobbin thread embroidery.

COMPUTERIZED EMBROIDERY: **10+3 Hours**

Computerized Embroidery Machine – Multi Head Embroidery Machine - Functions and Features. Embroidery Production Process – designing, punching and digitizing, special effects, networking. Selection of thread, color and stitches for computer controlled embroidery machines. Study of frames. Special attachments. Quality control aspects.

FASHION ACCESSORIES: **8+2 Hours**

Fashion Accessories – footwear, handbags, belts, gloves, hats, scarves, Jewellery - designing, selection of materials, product development and production.

Theory: 45 Hours **Tutorial: 15 Hours** **Total: 60 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. Gail Lawther, "Inspirational Ideas for Embroidery on Clothes and Accessories", Search Press Ltd., 1993.
8. Training Manual for Embroidery Machine Operators, TAJIMA, UIET, Tirupur, 2003.
9. Training Manual for Embroidery Machines, Barudan, Tirupur, 2002.

U13FT*T*503 CLOTHING SCIENCE AND FIT

L	T	P	C
3	0	0	3

Course Objectives

- To impart specialized knowledge of the physical science of clothing
- To teach the students the influence of textile properties on comfort.

Course Outcomes

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

- Recognize and associate the Effect of fibre properties, yarn structure and fabric construction on the fabric appearance, dimensional stability and fabric comfort
- Acquire Know ledge and associate the Effect of fibre properties, yarn structure and fabric construction on the fabric Serviceability and fabric handle

Course Content

HUMAN ANTHROPOMETRICS AND SIZING SYSTEMS: **9 Hours**

Definition, Traditional anthropometry, Development of sizing system, International sizing, Principles of sizing system.

SUBJECTIVE EVALUATION OF CLOTHING FIT: **9 Hours**

Definition of fit, Importance of Fit, Standards of Fit, influence of clothing Fit, Testing methods for dimensional Fit, Subjective rating scales, and subjective fitting guide.

OBJECTIVE EVALUATION OF CLOTHING FIT: Fit formula, Algebraic evaluation of clothing Fit, Pressure evaluation of clothing Fit. 3D modelling of pressure Fit.

AESTHETICS AND APPEARANCE: **9 Hours**

Selection of fibre, yarn structure and fabric construction; their effect on pilling, fastness, lusture overall appearance and Shade variation. Fabric properties related to clothing fit and appearance. Objective evaluation of wrinkling, seam pucker and overall 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: **9 Hours**

Objective evaluation of fabric hand by KES and FAST, and tailorability.

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

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.
5. Sandra Betzina, Fast Fit-Easy Pattern Alterations for Every Figure, The Taunton press inc ., Singapore, 2003

U13FT*7*504 TEXTILE CHEMICAL PROCESSING

L	T	P	C
3	0	0	3

Course Objectives

- To teach the students the various bleaching, dyeing, printing and finishing technologies for the various fabrics and garments.
- To educate the students on Eco friendly chemical processing and Eco Standards..

Course Outcomes

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

- Acquire knowledge chemical processing of cotton and blended materials.
- Identifying the suitable process to process the fibre, yarn and fabrics through preparatory and dyeing processes.
- Analyse the parameters and identifying the recipes for chemical processing of different materials.
- Aquire Knowledge and Analyse the parameters for Printing techniques
- Acquire knowledge on the eco-friendly processes and the effluent treatments.

Course Content

PRETREATMENTS: 9 Hours

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

DYEING: 12 Hours

Introduction- Dyeing equipments – 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 thermo sol) and cellulosic blends (one bath and two bath process). Fastness properties of dyes.

PRINTING: 7 Hours

Print paste - ingredients and preparation. Styles of printing - direct style of printing on cotton using pigments and reactive dyes, dis- charge 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, Flat bed, Transfer and Chest printing. Screen Making. Special prints – kadi, rubber, foam, glitter, leather, foil, flock 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.

Total: 45 Hours

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. John Shore, "Cellulosics Dyeing", Society of Dyers and Colourists, Mumbai, 2005
5. Lesile W.C. Miles, "Textile printing", Society of Dyers and Colourists, Mumbai,2003
6. "Chemical technology In the pre-treatment Processes of textiles" , S.R. Karmakar, ISBN: 0-444 50060-1 Nov,1999
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8. "Chemical Preparatory processing in Textiles" NCUTE Programmes series, march 13-14,2000.
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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.

U13FTT505 TEXTILE AND APPAREL QUALITY EVALUATION

L	T	P	C
3	0	0	3

Course Objectives

- To teach the students about the principles and working of textile testing instruments
- To teach the testing methods for apparel quality

Course Outcomes

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

- Acquire knowledge in sampling techniques of fibers, yarns and fabrics and also in various method of measuring yarn number
- Gain knowledge in principles of working of yarn testing instruments
- Gain knowledge in principles of working of fabric testing instruments
- Acquire knowledge on testing of fabric handle properties
- Explain the working principle of testing instruments used for accessories and fastness properties of fabrics

Course Content

SAMPLING TECHNIQUES AND YARN NUMBERING SYSTEM 9 Hours

Definition – random, biased sampling. Sampling techniques for fibre, yarn and fabric. Definition of Moisture Regain and Moisture Content. Standard conditions for testing samples.
Yarn count – Definition. Yarn Numbering System – Direct, indirect. Simple calculations.

YARN TESTING 9 Hours

Determination of yarn count, yarn twist- single and folded yarns. Measurement of yarn hairiness- optical, singeing and hairiness tester- Causes for yarn hairiness. Classification of variation. Methods of measuring evenness – Black board, ASTM standards, Cutting and weighing methods. Electronic capacitance – evenness tester – Uster standards.
Yarn faults – classification – Classimat. Measurement of yarn strength – Single yarn strength tester – Tensorapid, Tensojet - lea strength tester. Count Strength Product (CSP), its significance.

FABRIC TESTING - MECHANICAL PROPERTIES 9 Hours

Fabric tensile strength tester – raveled strip method – Grab methods. Fabric tear 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 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.

APPAREL AND ACCESSORY TESTING 9 Hours

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

Total: 45 Hours

REFERENCES

1. Arindam Basu, “Textile Testing – Fibre, Yarn and Fabric”, The South India Textile Research Association, Coimbatore, 2001.
2. B.P. Saville, “Physical Testing of Textiles”, Woodhead Publishing Limited, 1999.
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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.

U13FT*P*501 APPAREL PRODUCTION LABORATORY- I

L	T	P	C
0	0	3	1

Course Objectives

- To design, draft and construct the various children & ladies wear.
- To prepare the marker and costing details of children & ladies wear.

Course Outcomes

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

- Acquire knowledge on basic principles of designing and developing garments for children and ladies wear.
- Preparing basic blocks for different measurements and apply the grading techniques.
- Choose the suitable garment styles and apply the construction techniques for developing children and ladie's garments.

Course Content

LIST OF EXPERIMENTS:

1. Development of basic block patterns–top, skirt and bifurcated garments and grading of any one basic pattern
2. Designing and developing pattern for Baby set- Jabla, panty, bib and bonnet.
3. Construction of Baby set- Jabla, panty, bib and bonnet
4. Designing and developing pattern for Rompers
5. Construction of Rompers
6. Designing and Developing Pattern for Ladies Skirt and Top
7. Construction of Ladies Skirt and Top
8. Designing and Developing Pattern for Ladies Salwar
9. Construction of Ladies Salwar
10. Designing and Developing Pattern for Ladies Kameez
11. Construction of Ladies Kameez
12. Marker Planning for any one garment

Total: 45 Hours

U13FT*P*502 TEXTILE CHEMICAL PROCESSING LABORATORY

L	T	P	C
0	0	3	1

Course Objectives

- To impart the yarn and fabric dyeing procedures using various dyes.
- To teach the procedure for various methods of printing fabrics
- To teach the procedure for measuring the color fastness of dyed fabrics

Course Outcomes

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

- Acquiring knowledge on bleaching, dyeing and printing process
- Estimation and application of chemicals and dyes for processing the textile materials.
- Demonstrate ability to formulate appropriate shade and process parameters of chemical process.

Course Content

LIST OF EXPERIMENTS:

1. Bleaching of cotton using Hydrogen peroxide.
2. Dyeing of cotton with direct dyes on woven/ knitted fabric.
3. Dyeing of cotton with Reactive dyes on woven/ knitted fabric.
4. Dyeing of cotton with Vat dyes on woven/ knitted fabric.
5. Dyeing of protein fibres with Acid dyes.
6. Stripping and re-dyeing of cotton fabric.
7. Dyeing of Polyester using carrier.
8. Identification of dyes.
9. Direct style of printing on cotton fabrics.
10. Discharge style- printing on cotton.
11. Resist style-printing on cotton.
12. Determination of colour fastness of dyed fabrics using launderometer and crock meter.

Total: 45 Hours

U13FT*P*503 TEXTILE QUALITY EVALUATION LABORATORY

L	T	P	C
0	0	3	1

Course Objectives

- To teach the students about the working principle of various yarn and fabric testing instruments
- To impart knowledge on sample preparation and assessment of quality for various types of yarn and fabric testing instruments

Course Outcomes

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

- Acquire knowledge in basic principles of working of testing instruments
- Develop skills in preparing samples for various types of experiments and to conduct experiments.
- Analyze and interpret the data obtained from the testing instruments
- Conclude based on the standards and present the results

Course Content

LIST OF EXPERIMENTS

1. Determination of Yarn Count and Lea Strength
2. Determination of Single / Ply Yarn Twist
3. Determination of Yarn Appearance Grade
4. Determination of Fabric Abrasion Resistance
5. Determination of Fabric Tensile Strength
6. Determination of Color Fastness to Rubbing - Crock meter
7. Determination of Fabric Stiffness and Crease Recovery Angle
8. Determination of Fabric bursting strength and fabric Drape.
9. Determination of fabric pilling.
10. Determination of fabric tear strength.
11. Determination of colorfastness to perspiration.
12. Determination of shrinkage of woven and knitted fabrics.

Total: 45 Hours

U13GHP501 HUMAN EXCELLENCE SOCIAL VALUES

L	T	P	C
1	0	0	1

Course Objectives

- To produce responsible citizens to family and society
- To uplift society by pure politics and need education
- To realize the value of unity, service
- To immunize the body
- To get divine peace through inward travel

Course outcomes

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

CO1: Learn knowledge on the Duties and Responsibilities. (20%)
CO2: Demonstrate skills required for the Disparity among human being (20%)
CO3: Behave as a responsible Politics and Society & Education and Society (30%)
CO4: Analyze Impact of Science in Society (30%)

Course Content

1. Evolution of man – Man in society.
2. Duties and Responsibilities, Duty to self, family, society and the world.
3. Disparity among human beings.
4. Social welfare – Need for social welfare – Pure mind for pure society.
5. Politics and society – Education and society-Case study and live examples.
6. Impact of science in society - social development & society upliftments by science.
7. Economics & society – role of economics in creating a modern society.
8. Central message of Religions.
9. Yogasanas-I
10. Meditation-II [Thuriatheetham]

References

1. World peace plane ---- Vethathiri Maharishi
2. Prosperous India ---- Swami Vivekananda
3. Samudhaya chikkalukkana nala Aaivugal ---- Vethathiri Maharishi
4. World Community Life ---- Vethathiriyam

SEMESTER VI

U13GST008 PROFESSIONAL ETHICS

L	T	P	C
3	0	0	3

Course Objectives

- To create an awareness on Engineering Ethics and its use in ones profession
- To instill moral values, social values and loyalty
- To provide an insight into ones professional rights and a view of professional ethics in the global context

Course Outcomes

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

- Understand the ethical theories and concepts
- Understanding an engineer's work in the context of its impact on society
- Understand and analyze the concepts of safety and risk
- Understand the professional responsibilities and rights of Engineers
- Understand the concepts of ethics in the global context

Course Content

ENGINEERING ETHICS AND THEORIES: 9 Hours

Definition, Moral issues, Types of inquiry, Morality and issues of morality, Kohlberg and Gilligan's theories, consensus and controversy, Professional and professionalism, moral reasoning and ethical theories, virtues, professional responsibility, integrity, self respect, duty ethics, ethical rights, self interest, egos, moral obligations.

SOCIAL ETHICS AND ENGINEERING AS SOCIAL EXPERIMENTATION: 9 Hours

Engineering as social experimentation, codes of ethics, Legal aspects of social ethics, the challenger case study, Engineers duty to society and environment.

SAFETY: 9 Hours

Safety and risk – assessment of safety and risk – risk benefit analysis and reducing risk – the Three Mile Island and Chernobyl case studies. Bhopal gas tragedy.

RESPONSIBILITIES AND RIGHTS OF ENGINEERS: 9 Hours

Collegiality and loyalty – respect for authority – collective bargaining – confidentiality – conflicts of interest – occupational crime – professional rights – employee rights – Intellectual Property Rights (IPR) – discrimination.

GLOBAL ISSUES AND ENGINEERS AS MANAGERS, CONSULTANTS AND LEADERS: 9 Hours

Multinational Corporations – Environmental ethics – computer ethics – weapons development – engineers as managers – consulting engineers – engineers as expert witnesses and advisors – moral leadership – Engineers as trend setters for global values.

Total: 45 Hours

REFERENCES:

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering". McGraw-Hill, New York, 2005
2. John R. Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi. 2003
3. Bhaskar S. "Professional Ethics and Human Values", Anuradha Agencies, Chennai2005.
4. Charles D. Fleddermann, "Engineering Ethics", (Indian Reprint) Pearson Education / Prentice Hall, New Jersey. 2004
5. Charles E. Harris, Michael S. Protchard and Michael J Rabins, "Engineering Ethics – Concepts and cases", 2000 (Indian Reprint now available) Wadsworth Thompson Learning, United States.

U13FT*7*601 APPAREL PRODUCT DEVELOPMENT

L	T	P	C
3	0	0	3

Course Objectives

- To impart knowledge on the steps involved in new product development.
- To understand the industry practices involved between designing and production.

Course Outcomes

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

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

Course Content

FASHION INDUSTRY OVERVIEW : 9 Hours

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.

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, Rusell 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.

U13FT*7*602 APPAREL MERCHANDISING

L	T	P	C
3	0	0	3

Course Objectives

- To acquire knowledge on types of apparel industries and business concepts adopted.
- To acquire knowledge on marketing objectives, types of markets and strategies.
- To acquire knowledge on fundamentals of merchandising, functions of merchandiser
- To gain knowledge on sourcing principles and methods
- To gain knowledge on documentation followed by merchandiser.

Course Outcomes

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

- Acquire knowledge on fashion industry and types of apparels industry and business concepts adopted.
- Demonstrate understand types of apparel markets, marketing research and strategies.
- Gain knowledge on sourcing, supply chain management, and resource planning
- Acquire knowledge on role and responsibilities of merchandiser. Communication with stake holders, product development, line planning and presentation.
- Developing knowledge on merchandise management.

Course Content

FASHION INDUSTRY OVERVIEW: 10 Hours

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.

Organization of the Apparel Business: Introduction to apparel industry. Types of apparel exporters. Business concepts applied to the apparel industry.

MARKETING: 9 Hours

Functional organization of an apparel firm. Responsibilities of a marketing division - marketing objectives and Strategies - Marketing research - Types of markets: Retails and wholesale strategies for merchandise distribution- retailers - sourcing flows and practices. Marketing plan. Labeling and licensing.

SOURCING: 8 Hours

Need for sourcing - sourcing materials - Manufacturing Resources Planning - Material Resource Planning. Sourcing strategies - Overseas sourcing. Supply chain and demand chain analysis - Materials management for quick response - JIT technology

MERCHANDISING: 10 Hours

Definition of merchandising, Functions of merchandising division - Role and responsibilities of a export merchandiser - different types of buyers. Communications with the buyers - awareness of current market trends – product development –Tech pack analysis - Order confirmation process

Export Merchandising -. Classification of exporters - Manufacturer exporter, Merchant exporter, Job worker(CM/CMT). Retail Merchandising- Merchandising strategies, Roles and Responsibilities of retail merchandisers.

MERCHANDISE MANAGEMENT: 8 Hours

Product management - model stock plan, constraining factors, types of suppliers and selection criteria, category management, merchandise management planning in retail and export segments. Brand Management - Brand documentation- Brands and brand awareness. Documentation on brands. Brand formulation. Brand Licencing.

Total: 45 Hours

REFERENCES

1. Philip Kotler, Kelvin Lane Keller, Abraham Koshy and Mithileshwar Jha, "Marketing Management a South Asian Perspective", Pearson Education India, 2006.
2. Evelyn C Moore, "Math for Merchandising", Wiley Eastern Inc., 2002.
3. John Donnellan "Merchandise Buying and Management", Farichild Publications, inc., New York, 2002
4. Ruth E Glock and Grace I Kunz, "Apparel Manufacturing", Prentice Hall, New Jersey, Fourth Edition, 2005.
5. "The Textile Industry: Winning strategies for the New Millennium", Volume II, Textile Institute., 1999

U13FT*7*603 APPAREL PRODUCTION PLANNING AND CONTROL

L	T	P	C
3	1	0	4

Course Objectives

- To acquire knowledge on objectives and importance of production planning
- To obtain knowledge on plant layout types and evaluating plant layout
- To acquire knowledge of different apparel manufacturing systems and process analysis
- To gain knowledge on material management concepts and control forms
- To acquire knowledge on production scheduling, capacity planning and line balancing

Course Outcomes

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

- Acquire knowledge on basic techniques of production planning & control in garment industry
- Identify the suitable plant site location, layout and production system for apparel industry based on style and quantity of merchandise
- Prepare the flow process grids, control forms and scheduling charts for production control in apparel industry
- Explain the cut order planning and material management system for apparel industry
- Determine the capacity planning and line balancing techniques to achieve balanced production

Course Content

PRODUCTION PLANNING AND CONTROL: **9+2 Hours**

Definition, Objectives of production control, relationship of production control to the functional areas of a manufacturing organization.

Pre planning: Pre-production functions, Importance of Preproduction function. Lead Time, Product development - steps from prototype to production sample. Product data management.

PLANT LAYOUT: **8+2 Hours**

Plant site location. Plant Layout - definition – types of production layout, criteria for evaluation of a plant layout. Basic production line layout. Determining minimum space requirement, Government regulations for plant layouts.

APPAREL MANUFACTURING SYSTEMS: **8+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.

Flow Process Grids and Charts – Flow process grid construction, flow process grids for production control.

Cut Production Analysis: Cut order planning – types of spreads, spreading methods, marker utilization, economic cut quantities**.**

MATERIAL MANAGEMENT: **10+5 Hours**

Manufacturing Resources planning (MRP II), Just in Time Production system (JIT), Optimized Production Technology (OPT), Inventory Modeling – Economic order quantity (EOQ)

Control Forms: Functions of cutting order, cutting ticket, bundle control sheet.

Principles of Scheduling: scheduling charts – GANTT chart, backlog graph. Scheduling techniques Network representation – CPM and PERT

10+3 Hours

PLANT LOADING AND CAPACITY PLANNING: Determination of machine requirements for a new factory -calculation of labor requirements

LINE BALANCING: determination and allocation of man power and machines for balanced production in existing plant for a given target, application of line balancing techniques – balance control.

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

REFERENCES

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. Carr Harold, Latham Barbara, "The Technology of Clothing Manufacture", Om Book Service, 2004.
7. Bracken Bury, "Knitted Clothing Technology", Om Books Service, 1999.
8. Gerry Cooklin, "Introduction to Clothing Manufacture", Blackwell Science Ltd.,2005.
9. Gerry Cooklin, "Garment Technology for Fashion Designers", Om Books service, 1997.
10. Churter, A.J., "Introduction to Clothing Production Management", Oseney Mead, 2001.

U13FT*7*604 APPAREL FINISHING AND CARE

L	T	P	C
3	0	0	3

Course Objectives

- To educate in techniques and processes for finishing and care of garments.
- To impart knowledge on types of finishes, selection of chemicals and parameters
- To impart knowledge on functional, special finishes and unconventional finishes.
- To acquire knowledge on Quality assurance and apparel care.

Course Outcomes

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

- Acquire knowledge on types of finishes on fabrics and garments.
- Analyse the different conditions and chemicals need for finishing of materials
- Acquiring knowledge on Denim Finishes and advanced finishes.
- Acquiring knowledge on un-conventional finishes and their applications.
- Acquire knowledge on Quality assurance and stains and their removal in apparel.

Course Content

INTRODUCTION: **9 Hours**

Reason for finishing, types and classification of finishing, Mechanical finishes- Calendering, Sanforizing, Compacting & Stentering requirements for garment finishing. 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.

FUNCTIONAL FINISHING: **9 Hours**

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, silicone finishing and their methods of application.

SPECIAL FINISHES: **9 Hours**

Process conditions, machineries, chemicals used for various special effects-stone wash, acid wash, enzyme wash, bio- polishing, sand blasting, 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.

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.

Quality Assurance in finished garments: Quality requirements, Standards and Limitations for finished garments and accessories.

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, Wood head Publishing Limited, CRC Press. 2005.
9. W.D. Schiendler and P.J. Hauser, “Chemical Finishing of Textiles”, The Textile Institute, Wood Head, 2004.

U13FT*P*601 APPAREL PRODUCTION LABORATORY- II

L	T	P	C
0	0	3	1

Course Objectives

- To impart the skill to prepare patterns for ladies and menswear
- To teach the techniques in grading and constructing various ladies and menswear

Course Outcomes

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

- Develop skills in fashion illustration and designing for ladies & men's wear
- Develop patterns as per the required styles for ladies & men's garments and practice grading for different sizes
- Practice construction of apparel, outline construction flow process for various ladies & men's garments
- Estimate fabric consumption by marker making and costing of apparels

Course Content

LIST OF EXPERIMENTS:

1. Development of basic block patterns–top, skirt and bifurcated garments and grading of any one
2. Designing and Developing Pattern for Brassier and Panties
3. Construction of Brassier and Panties
4. Designing and Developing Pattern for Choli
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 Basic T-shirt
12. Marker Planning for any one garment

Total: 45 Hours

U13 FT*P*602 APPAREL CAD LABORATORY

L	T	P	C
0	0	3	1

Course Objectives

- To impart skills for apparels and accessory designing with CAD
- To teach the techniques in designing, pattern making and grading of various children, ladies and menswear using CAD
- To facilitate knowledge acquiring in marker planning

Course Outcomes

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

CO1 – Acquire skill on application of Computer aided design software to design apparels and accessories.

CO2 – Acquire skill on application of Computer aided pattern drafting, grading software to draft and grade patterns of different apparels

CO3 – Acquire ability to create and manipulate marker plan

Course Content

LIST OF EXPERIMENTS:

1. Design a Children's wear including accessories.
2. Design a ladies party wear including accessories
3. Design a Men's Formal wear including accessories
4. Develop design, pattern, grading for children's wear – Baby frock using a one way fabric of 38" and 42" width.
5. Develop design, pattern, grading for children's wear – Rompers using a two-way fabric of 38" and 42" width.
6. Develop design, pattern, grading and marker plan for a Ladies top with fabric of 44" and 52"
   width. Calculate the marker efficiency.
7. Develop design, pattern and marker plan for a Men's Basic T shirt of 48" fabric width. Calculate the marker efficiency.
8. Develop design, pattern, and grading and marker plan for Men's Formal Trouser using fabric of 60" and 72" width. Calculate the marker efficiency.
9. Develop design, pattern, and grading and marker plan for Ladies Full Gown using fabric of 48" width. Calculate the marker efficiency.
10. Develop design, pattern, grading and marker plan for a Ladies Skirt using plaid fabric of 38" and 60" width. Calculate the marker efficiency.
11. Develop design, pattern, grading and marker plan for a Men's Full arm shirt using fabric of 60" and 72" width. Calculate the marker efficiency.
12. Develop design, pattern, grading and marker plan for Salwar Kameez using fabric of 60" and 72" width. Calculate the marker efficiency.

Total: 45Hours

U13EN*P*601 COMMUNICATION SKILLS LABORATORY

L	T	P	C
0	0	3	1

(Common to all branches of Engineering and Technology)

Course Objectives

- To equip students of engineering and technology with effective speak- ing and listening skills in English.
- To help them develop their soft skills and people skills, which will make the transition from college to workplace smoother and help them to excel in their jobs and to enhance students' performance at Placement Interviews, Group discussions and other recruitment exercises.

Course Outcomes

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

- Imparting the role of communicative ability as one of the soft skills needed for placement
- Developing communicative ability and soft skills needed for placement
- Making students Industry - Ready through inculcating team-playing capacity

Course Content

I ENGLISH LANGUAGE LAB

LISTENING COMPREHENSION

Listening – Listening and sequencing of sentences – Filling in the Blanks – Listening and answering the question

READING COMPREHENSION AND VOCABULARY

Filling in the blanks – Cloze Exercises – Vocabulary building – Reading and Answering questions

SPEAKING:

Intonation – Ear Training – Correct Pronunciation – Sound Recognition exercises – Common Errors in English

CONVERSATIONS:

Face to face Conversation – Telephone conversation - Role play Activities (Students take on roles and engage in conversation)

II CAREER LAB

RESUME / REPORT PREPARATION / LETTER WRITING

Structuring the resume / report – Letter writing / E-mail communication – Samples

PRESENTATION SKILLS

Elements of an effective presentation – Structure of a presentation – Presentation Tools – Voice Modulation – Audience analysis – Body Language

SOFT SKILLS

Time Management – Articulateness – Assertiveness – Innovation and Creativity – Stress Management & Poise

GROUP DISCUSSION

Why is GD part of the selection process? – Structure of a GD- Moderator- led and Other GDs – Strategies in GD – Team work – Body Language –Mock GD

INTERVIEW SKILLS

Kinds of Interviews –Required Key Skills – Corporate culture- Mock Interviews

Total: 45 Hours

REFERENCES

1. Meenakshi Raman and Sangeetha Sharma, Technical Communication- Principles and Practice, Oxford University Press. New Delhi (2004)
2. Barker. A – Improve your communication skills – Kogan page India Pvt Ltd. New Delhi (2006)
3. Adrian Doff and Christopher Jones- Language in Use (Upper- Intermediate) Cambridge University Press. First South Asian Edition (2004)
4. John Seely, the Oxford Guide to writing and speaking, Oxford University Press, New Delhi (2004)

CD's:

1. Train2sucess series 1.Telephone Skills.2. Interviewing Skills 3. Negotiation Skills by Zenith Global Consultants Ltd. Mumbai
2. BEC Series
3. Look Ahead by Cambridge University Press

U13GHP601 HUMAN EXCELLENCE - NATIONAL VALUES

L	T	P	C
1	0	0	1

Course Objectives

- To produce responsible citizens
- To uphold our culture and spiritual life
- To realize the value of unity, service
- To immunize the body
- To get divine peace through inward travel

Course Outcome

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

CO1: Acquire knowledge on the Enlightened Citizenship.(30%)
CO2: Demonstrate skills required for the Indian Culture and it's greatness. (20%)
CO3: Behave as a responsible Great spiritual Leaders. (20%)
CO4: Analyze National Values identification and practice. (30%)

Course Content

1. Citizenship- its significance-Enlightened citizenship.
2. Emerging India-it's glory today- Global perspective-other view about India.
3. Indian culture and it's greatness.
4. India and Peace.
5. India and Spirituality- Great spiritual leaders.
6. India's message to the world – it's role in global peace.
7. Service and sacrifice-Unity in diversity – case studies-live examples.
8. National values identification and practice.
9. Yogasanas -II
10. Meditation III [Nithyanandam& Nine Centre Meditation]

References

1. World peace plane ---- Vethathiri Maharishi
2. Prosperous India ---- Swami Vivekananda
3. Samudhaya chikkalukkana nala Aaivugal ---- Vethathiri Maharishi
4. World Community Life ---- Vethathiriyam

SEMESTER VII

U13FT*T*701 INDUSTRIAL ENGINEERING IN APPAREL MANUFACTURING

L	T	P	C
3	1	0	4

Course Objectives

- To impart knowledge on basics of industrial engineering and industrial engineering techniques
- To understand the fundamentals of productivity, factors influencing productivity and measures for improving productivity.
- To understand the principles and methodology of work study – method study and work measurement
- To acquire skill in application of work study in apparel manufacture to improve process efficiency

Course Outcomes

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

- Acquire broad knowledge of the various industrial engineering methods and tools associated with manufacturing systems and human factors
- Demonstrate modern industrial engineering methods and scientific solutions to apparel manufacturing towards economic, environmental, and societal context
- Perform as industry leaders in the global marketplace, capable of successfully planning, controlling, and implementing large-scale projects
- Understand and apply the principles of science, technology, engineering, and math involving industry-relevant problems.
- Acquire skills to investigate, experiment and solve problem in context with productivity improvement and material handling

Course Content

INTRODUCTION: **9+3 Hours**

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

Productivity: Definition - Productivity, Productivity measures .Reduction of work content due to the product and process, Reduction of ineffective time due to the management, due to the worker. Causes for low productivity in apparel industry and measures for improvement.

WORK STUDY: **9+3 Hours**

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

Work environment – Lighting, Ventilation, Climatic condition on productivity. Temperature control, humidity control, noise control measures. Safety and ergonomics on work station and work environment

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

METHOD STUDY: **9+3 Hours**

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

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

WORK MEASUREMENT: **9+3 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, Performance rating – relaxation and other allowances. Calculation of SAM for different garments, GSD.

WORK STUDY APPLICATION: **9+3 Hours**

Application of work study techniques in cutting, stitching and packing in garment industry. Workaids in sewing, Pitch diagram ,Line balancing, Capacity planning, scientific method of training.

Theory: 45 Hours **Tutorial: 15 Hours** **Total: 60 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. Kiell B.Zandin, " Mayanard's " Industrial Engineering Hand Book", Fifth edition, Mc Graw Hill, NewYork, 2001.
4. Sharma (S K) ;Sharma (Savita "Work Study And Ergonomics **"**S. K. Kataria & Sons (publishers) ISBN: 818845834, 2010
5. Khanna.O.P., "Industrial Engineering and Management", Danpat Rai and Sons,1987.
6. Ralph M. Barnes, "Motion and Time Study Design and Measurement of Work", 7th Edition, John Wiley and Sons, New York, 1980.
7. Khan.M.I., "Industrial Ergonomics", PHI LTD. Eastern Economy Edition, 2010.
8. Kantilla Ila, "Apparel Industry In India", Prentice Hall, 1990.
9. Rajesh Bheda, "Managing Productivity in Apparel Industry "CBS Publishers & Distributors, ISBN8123909217, 9788123909219, 2008

U13FT*7*702 SUSTAINABILITY IN APPAREL INDUSTRY

L	T	P	C
3	0	0	3

Course Objectives

- Educate impact of various factors on sustainability and need for sustainability.
- Impart Knowledge on sustainability through effective resource utilization and application of modern tools
- Impart knowledge on achieving sustainability in apparel manufacture through waste reduction, resuse and recycling.
- Educate on eco management industrial and government norms and standards

Course Outcomes

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

- Acquire knowledge on impact of various factors on sustainability and need for sustainability
- Develop understanding on sustainability through effective resource utilization and application of modern tools
- Demonstrate skill towards achieving sustainability in apparel manufacture through waste reduction, reuse and recycling.
- Gain awareness on eco management industrial and government norms and standards

Course Content

SUSTAINABLE DESIGN: 9 Hours

Definition of Sustainability – need for sustainability. Factors influencing sustainability. Impact of ecology, economy, and culture on sustainability. Product Life Cycle sustainability using low - impact materials, recyclable material content. Sustainable fibres – organic cotton, recycled polyester, alternative sustainable fibers.

SUSTAINABLE PROCESS DEVELOPMENT: 9 Hours

Sustainability through Effective Resource Utilization - raw material, plant and machinery, human resource. Sustainable manufacture through application of alternative energy source and reuse and recycle of energy. Sustainable process through technology innovation – application of CAD / CAM / CIM in process innovation and improvement. Assessing process sustainability.

SUSTAINABLE MANUFACTURE: 9 Hours

Sustainable elements in manufacture – cost of production, waste creation – process waste and defects. Operational safety and ergonomics. Sustainability in supply chain - supplier sustainability assessment.

REUSE AND RECYCLE OF WASTE: 9 Hours

Types of wastes in apparel manufacture – material waste, human resource waste, energy waste. Scope of reuse and recycle of waste in apparel manufacture.

ECO-MANAGEMENT: 9 Hours

Objective of ecology policy – Environmental Impact Assessment (EIA) – Elements of EIA process – Important Environmental Laws - Environmental Pollution Control in Wet Processing- Legislation by Indian Government.

Total: 45 Hours

REFERENCES

1. Lewis, H. and Gertsakis, J., Design and Environment: A Global Guide to Designing Greener Goods, Greenleaf Publishing, Sheffield, 2001
2. Dalcacio Reis, Julius Wiedemann 'Product Design in the Sustainable Era', TASCHEN Publication. 2000
3. Janet Hethorn, Connie Ulasewicz, 'Sustainable Fashion: Why Now? A conversation exploring issues, practices, and possibilities', Fairchild Books, 2007.
4. V. Ann Paulins and Julie L. Hillery, Ethics in the Fashion Industry New York, Fairchild Books, 2009.
5. Janet Hethorn, Connie Ulasewicz, 'Sustainable fashion: Why now? : A conversation about issues, practices, and possibilities,' Fairchild Books, 2008
6. Liz Parker and Marsha A. Dickson, 'Sustainable Fashion: A Handbook for Educators' Ed. Educators for Socially Responsible Apparel Business, USA.
7. Marsha A. Dickson, Suzanne Loker, Molly Eckman, Social Responsibility in the Global Apparel Industry, Bloomsbury Publishing Plc. 2011
8. Goodell, E., Standards of Corporate Social Responsibility', Social Venture Network: San Francisco. 1999

U13FTT703 QUALITY ASSURANCE IN APPAREL PRODUCTION

L	T	P	C
3	0	0	3

Course Objectives

- To acquire knowledge on importance of quality assurance in manufacturing process. Concepts in quality assurance. Methods of inspection
- To acquire knowledge on statistical tools for quality assurance. International standards for apparel products and manufacturing process.
- To acquire knowledge on quality assurance in apparel manufacturing and finishing process, process standards and tolerance limits

Course Outcomes

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

- Acquire knowledge on the concepts of quality assurance, its importance in manufacturing process, and realizing the same through sampling-based inspection.
- Acquire knowledge on statistical tools, apply them for quality assurance, and compare the results with international standards for apparel products.
- Acquire knowledge on quality control of material and processes in apparel manufacturing through the use of tolerance limits and process standards.

Course Content

INTRODUCTION **9 Hours**

Quality definition – Quality control and its necessity. Quality assurance - difference between quality assurance and quality inspection. Inspection and importance - Functions of inspection – Types of inspection - 100% inspection, spot checking. Sampling arbitrary sampling and statistical sampling. Comparison of 100% inspection and sample inspection. Systems of inspection – raw material inspection, in process inspection and final inspection – AQL

STATISTICAL QUALITY CONTROL AND QUALITY MANAGEMENT **9Hours**

Quality tools - Cause-and-effect diagram, Check sheet, Control chart, Histogram, Pareto chart, Scatter diagram and flow chart. Control charts and their application.
Quality Circles and Total Quality Management. Classification of defects – product defect, process defect. Grading visual defects. Defect zones in apparels.

INTERNATIONAL STANDARDS **9 Hours**

Product Standards and Process standards - ISO, ASTM, BS, ANSI, ASA, BIS, ASQ, AATCC, GOTS, Oekotex. Specifications and standards for raw material, accessories, manufacturing process, testing and services. Standard performance specifications for women's, men's, children's wear – woven and knitted.

TYPES OF CONTROL DOCUMENTS **9 Hours**

Raw material purchase and utilization, spreading, cutting, sewing and packing. Quality control for fabrics – different types of defects in fabrics – classification into major and minor faults – fabric inspection systems – 4 point, 10 point systems. Quality control in pattern making, marker planning, cutting, sewing and packing.

QUALITY CONTROL IN APPAREL PRODUCTION **9 Hours**

Tolerance limits and quality standard for fabric, cutting, sewing in garment industry. Tolerances and quality standard for finished garments. Quality control of labels, buttons, zippers, fasteners. Quality control systems and standards for packing and packed goods. Quality cost analysis - Cost of quality – cost of conformance - cost of non-conformance.

Total: 45 Hours

REFERENCES

1. Jacob Solinger, "Apparel Manufacturing Handbook", Prentice Hall, 1998
2. PradipV.Mehta, P.E, Satish K.Bharadwaj, "Managing Quality in Apparel Industry", Newage International (P) Ltd, Publishers, 2006
3. SammelEliou, "Production Planning and Control", Wiley Eastern Pvt. Ltd.2007
4. M.Mahajan, "Statistical Quality Control", DhanpatRai and Co. (P) Ltd, 2007
5. Billie J. Collier, Helen H. Epps, "Textile Testing and Analysis", Prentice Hall, New Jersey,1999
6. Mario Bona, "Textile Quality" Texilia, 1994.

U13FTT704 COSTING IN APPAREL INDUSTRY

L	T	P	C
3	1	0	4

COURSE OBJECTIVES

- To teach the students about different methods used in the apparel industry in product cost calculation.
- To impart knowledge on entrepreneurship skills and project preparation.

Course Outcomes

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

- Acquire knowledge in preparing estimate form and cost sheet by defining cost elements
- Describe the factors that determine cost of apparel products
- Apply the knowledge in textile raw materials (yarn and fabric), accessories and manufacturing methods to derive the cost of basic apparel products
- Acquire knowledge in different product categories in apparel industries to know the sourcing of different raw materials and accessories
- Acquire knowledge in preparing a project report for setting up of a garment unit

Course Content

ESTIMATING AND COSTING: 10+5

Aims of estimating – Functions of estimating- Importance of preparing estimates- Estimating procedure- Estimate form– Types of estimates.

Costing- aims of costing- Importance of Costing – Difference between estimating and costing – Elements of Cost. Overheads - Types. Full cost pricing and marginal cost pricing Cost sheet and its preparation.

MATERIAL AND CMT COST: 8+2 Hours

Factors that determine the cost of garments – material cost – cost of yarn, cost of fabric production, cost of processing. Width, design and lot size of fabric affecting cost. Cost of components – cutting cost – making and trim cost (CMT cost) - Simple problems.

PREPARATION OF PRE COST SHEET: 9+2 Hours

Packing and labeling cost – different types of labels and packing materials and their functions. Uses of brand and size label. Cost of bought out components -Thread, Button, Zippers, Interlining. Shipment cost, Cost calculation for ladies, Men's and children's wear – woven and knitted – simple problems.

CLASSIFICATION OF APPAREL UNITS: 10+4 Hours

Classification of garment units – wovens – knit garments – lingerie –leather garment – sports wear – outer wear – under garments – hospital wear and Industrial Garment. Entrepreneurship – Entrepreneurship development skills.

PREPARING PROJECT REPORT: 8+2 Hours

Setting up a small garment unit. Preparing a project report. Concept of small scale industry – advantages of SSI units. Large scale industry - its advantages over SSI. Bank assistance. Factory act – Welfare measures – Safety act.

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

REFERENCES

1. Maurice Johnson and E. Moore, “Apparel Product Development”, Om Book Service, 2001.
2. Katherin, McKelvy, “Fashion Source Book”, Om Book Service, 2001.
3. R.K.Sharma, “Development Banks and Entrepreneurship Promotion in India”, Mital Publications, New Delhi. 2003
4. O.P Khanna, “Industrial Engineering and Management”, Dhanpat Rai Publications, 2007
5. B.M.Lall Nigam and I.C.Jain “Cost Accounting Principles and Practice”, Prentice Hall of India, 2007.
6. M.Y.Khan and P.K.Jain “Cost Accounting”, Hill publishing Ltd., New Delhi, 2007.
7. Ruth E.Glock and Grace I. Kunz, “Apparel Manufacturing Sewn Product Analysis”, Dorling Kindersley (India) Pvt. Ltd., 2005.

U13FT*7*705 APPAREL EXPORT MANAGEMENT

L	T	P	C
3	0	0	3

Course Objectives

- To impart knowledge on basics of international trade. Position of India in global textile trade
- To provide knowledge on method of setting up export unit and understand exim policy of the government
- To facilitate understanding of the sources for export finance, various export support schemes
- To facilitate gain of knowledge on export procedure and documents for export and export realization.

Course Outcomes

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

- Acquire knowledge on need for exports and export trade statistics.
- Understand steps involved in setting up export business and acquire knowledge on export correspondence and negotiation
- Acquire knowledge on EXIM policy and export promotion schemes
- Demonstrate understanding of export finance and payment terms
- Demonstrate knowledge in export documentation and procedures

Course Content

INTRODUCTION TO INTERNATIONAL TRADE: **12 Hours**

Basics of international trade and i ts 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: **8 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.

EXIM POLICY: **8 Hours**

High lights 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,

EXPORT FINANCE: **8 Hours**

Basic concepts of foreign exchange – foreign exchange risk management - Forfeiting and Factoring. Methods of International Payment Settlement - International Commercial Terms - 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.

Total: 45Hours

REFERENCES

1. Balagopal T A S, “Export Marketing“, Himalayan Publishing House, 2005.
2. International Trade and Export Management. - Francis Cherunilam 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”, Excell Books 2005.
6. Hearle J W S, Hines T and Suh M, “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 Publishsing Company, 2003.

U13FTP701 APPAREL QUALITY EVALUATION LABORATORY

L	T	P	C
0	0	3	1

Course Objectives

- To teach the students about the working principle of testing instruments used for testing garment accessories
- To impart knowledge on sample preparation and assessment of quality of apparels and accessories.

Course Outcomes

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

CO1 – Acquire knowledge in basic principles of working of testing instruments

CO2 –Develop skills in preparing samples for various types of experiments and to conduct experiments.

CO3 – Analyze and interpret the data obtained from the testing instruments

CO4 – Conclude based on the standards and present the results

Course Content

LIST OF EXPERIMENTS:

1. Determination of Seam Strength and Seam Slippage
2. Determination of Zipper strength
3. Determination of Button Pull Strength
4. Determination of Peel bond strength of fusible interlinings
5. Determination of Wickability of fabric
6. Determination of Spirality and Course length of Knitted fabrics
7. Classification of Fabric defects and evaluation using 4 point system.
8. Determination of Wettability of fabrics.
9. Analysis of garment defects and classification into minor, major and critical defects.
10. Analysis of Seam puckers.
11. Determination of garment dimensional stability.
12. Color measurement of fabrics with computerized colour matching.

Total: 45Hours

U13FTP702 PORTFOLIO PRESENTATION

L	T	P	C
0	0	3	1

Course Objectives

- To impart the skills of designing and developing apparel products based on a concept and published fashion forecasts
- To train the students in skills of presenting Apparel designs

Course Outcomes

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

- Interpret and relate the published fashion forecasts to design apparels based on a concept
- Create and develop apparels based on requirements
- Select the suitable raw materials, garment trims & accessories and other garment details based on the garment requirements
- Estimate the Garment costing based on the sample developed

Course Content

GUIDELINES:

The following have to be prepared:

1. Design Research and Conceptualization
2. Client profile.
3. Theme board
4. Color and forecast board
5. Sourcing Board – fabrics and trims
6. Fashion design presentation board – 5 nos.
7. Product development -2 Nos. – One men's wear, one women's wear

Total: 45 Hours

U13GHP701- HUMAN EXCELLENCE - GLOBAL VALUES

L	T	P	C
1	0	0	1

(Common to all branches of Engineering and Technology)

Course Objectives

- To realize global brotherhood and protect global
- To know the youths participation in politics
- To know importance of retain of our culture and maintain
- To know impact of global terrorism
- To know the current economic status among the youths

Course Content

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

CO1: Acquire knowledge on the complex patterns involved in maintaining world's peace and ecological balance. (20%)

CO2: Demonstrate skills required for the emergency of mono-culture at the global level. (30%)

CO3: Behave as a responsible human beings respecting the global values. (20%)

CO4: To learn about Man is the cause and Man is the solution.(30%)

Course Content

1. Global values – understanding and identification – its importance.
2. Racial discrimination and solution – Ecological imbalance and solution.
3. Political upheavals and solution – Social inequality and solution – live case discussions and debate.
4. Cultural degradation and solution – live case discussions and debate.
5. Emergence of monoculture – solution.
6. Global terrorism – it's cause and effect – solution.
7. Economic marginalization and solution – it's impact in the globe.
8. Man is the cause and man is the solution.
9. All Meditations.
10. All Yogasanas.

Practical: 45 Hrs Tutorial: 00 Hr **Total Hours: 45 Hrs**

References

1. World peace plane ---- Vethathiri Maharishi
2. Prosperous India ---- Swami Vivekananda
3. Samudhaya chikkalukkana nala Aaivugal ---- Vethathiri Maharishi
4. World Community Life ---- Vethathiriyam

ELECTIVE - I
(Semester V)

U13FTE101 FASHION PHOTOGRAPHY

L	T	P	C
3	0	0	3

Course Objectives

- To acquire knowledge on the equipments involved in photography
- To understand the importance and application of photography in various fields

Course Outcomes

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

- Acquire knowledge on types of camera, working principles of camera and their various accessories.
- Define knowledge on various camera techniques such as basic techniques, equipment techniques, and subject techniques.
- Ability to identify the importance of lighting, types of lighting, film types, film speed, film format.
- Acquire skills on fashion photography in different fields.
- Acquire knowledge on developing and printing, image mixing and printing, computer application in photography and video photography.

Course Content

INTRODUCTION: **9 Hours**

Camera types – 35mm, SLR, Digital camera. Working principle of camera. Accessories: general accessories - lenses, lens filters, film types, flashlights- lighting accessories - power accessories, system accessories. Care and maintenance of camera.

TECHNIQUES: **12 Hours**

Camera techniques: Basic techniques – fundamentals of composition, depth of field, shutter speed, focusing, using exposures. Equipment techniques – filter techniques, lens techniques, flash techniques, studio flash techniques, lighting techniques**.** Subject techniques – landscape, night photography, portrait, action photography and special effects. Outdoor and Indoor Photography – equipments.

LIGHTING AND FILM: **9 Hours**

Lighting – concept and importance – Types of lighting – front light, side light, back light, revealing light, controlling light, flash and studio lighting. Film types – Black and White, Colour. Film speed- Film format.

SUBJECT PHOTOGRAPHY: **6 Hours**

Fashion Photography in different media – modeling, newspaper, magazines and fashion shows.

DEVELOPING AND PRINTING: **9 Hours**

Basics of developing and printing – image mixing and printing. Computers in photography. Video photography

Total: 45 Hours

REFERENCES

1. Nirmal Pasricha, “A Professional’s Basic Photography”, Black Rose Publications, Delhi, 2002.
2. Daniel Lezano, “The Photography Bible”, A David and Charles Book., United Kingdom, 2004.
3. Simon Joinson, “Get the most from your Digital Camera”, A David and Charles Book., United Kingdom, 2004.
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, “35 mm 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.

U13FTE102 VISUAL MERCHANDISING

L	T	P	C
3	0	0	3

Course Objectives

- To impart knowledge on elements and environments of visual merchandising
- To teach the students about store planning and assortment planning.

Course Outcomes

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

- Define and appreciate the significance and role of visual merchandising in a retail environment, in order to effectively present the merchandise to the consumers
- Classify the various elements of Visual presentation and understand their significance in visually presenting a display`
- Analyze and identify the best suitable environment for a merchandise including interior, exterior and point of displays
- Acquire knowledge on various techniques used in presenting and optimizing the merchandise and retail space to customers.
- Plan and execute a visual a display
- Acquire knowledge on the various features available in a computer controlled visual merchandising

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, Department Store 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 mood in garment display.

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, race track, freeform and their direction of flow. Floor plans and reading of floor plans – P lan-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

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

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 Multi channel 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

U13FT*E*103 GARMENT TRIMS AND ACCESSORIES

L	T	P	C
3	0	0	3

Course Objectives

- To understand the significance of selecting suitable trims and accessories for various purposes
- To understand the various standards involved in testing the various trims and accessories

Course Outcomes

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

- Acquire knowledge in the fundamentals of garment trims and accessories
- Develop an understanding of the types and characteristics of primary trims
- Gain knowledge on the types and characteristics of secondary trims
- Recognize and identify the types and characteristics of packing and finishing accessories
- Understand the importance of performance and testing of garment trims and accessories

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 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 (ASTM Standards), 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 (BS 4162 and ASTM D5171), Snap Fasteners(ASTM D4846) Zipper (BS3084, ASTM D2061, AS 2332), Elastics (ASTM D4964 and EN 14704 Part 3), Safety tests (BS 7907, EN 71-1, 16 CFR 1501 (16 CFR.1500.51,52and53), Attached components/trims/Motifs/prints -Durability to washing – ISO 6330, Tests for nickel free and lead free trims and accessories.

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
6. ISO Standards- www.iso.org/iso/iso_catalogue.htm

U13CSE141 OBJECT ORIENTED PROGRAMMING WITH C++

L	T	P	C
2	0	2	3

Course Objectives

- Understand the concepts of Object Oriented Programming.
- Write simple applications using C++.

Course Outcomes

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

- Be able to understand the object-oriented approach in programming
- Should be able to design a computer program to solve real world problems based on object-oriented principles.
- Write simple applications using C ++

Course Content

FEATURES OF PROCEDURE ORIENTED PROGRAMMING: 8 Hours

Object oriented programming paradigm – Basic concepts of object oriented programming – Benefits of OOP – Object oriented languages – Applications of OOP – What is C++? – A simple C++ program – Structure of C++ program – Creating the source file.

BASIC DATA TYPES: 10 Hours

User defined and derived data types– Operators – Manipulators – Expressions and their types – Control structures - Functions in C++ – Main function – Function prototyping – Call by reference – Return by reference – Default arguments – Constant arguments – Inline function – Function overloading.

CLASSES AND OBJECTS: 9 Hours

C++ program with class- Static data members and functions- Array of objects – Object as function arguments - Friendly Functions – Returning objects – Constant Member functions.

CONSTRUCTORS: 9 Hours

Parameterized Constructors – Multiple Constructors – Constructors with default arguments - Copy constructors – Dynamic constructors - Constant objects - Destructors.- Introduction to operator overloading – Overloading unary operators – Overloading binary operators – Rules for overloading operators.

INHERITANCE: 9 Hours

Single, Multiple, Multilevel and Hybrid inheritance – Virtual base classes – Abstract Classes - Virtual functions – Pure virtual functions.

Total : 45 Hours

REFERENCES

1. E. Balagurusamy, “Object Oriented Programming with C++”, TMH, 2003.
2. Robert Lafore, “Object Oriented Programming in C++”, Galgotia, 1999.

ELECTIVE - II
(Semester VI)

U13FT*E*201 INTIMATE APPARELS

L	T	P	C
3	0	0	3

Course Objectives

- To gain knowledge on market trends in lingerie.
- To impart knowledge on design and development of men's and women's intimate wear.

Course Outcomes

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

- Acquire knowledge on basic principles in designing and types of inner wear garment and fabrics for intimate apparel.
- Developing skills in preparation of intimate men's and women's garments by various measurements, pattern development and construction methods.
- Relate the suitability of accessories and other construction methods of producing intimate Apparels.

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.

MEN'S UNDER WEAR: **7 Hours**

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

WOMEN'S LINGERIE: **9 Hours**

Introduction, Design and development - measurements - Step by step drafting procedure and construction sequence - waist petticoats, bras, panties, camisoles.

NIGHT WEAR: **9 Hours**

Introduction, Design and development- measurements - Step by step drafting procedure and construction sequence - Night Dress, Pyjamas, Bath Robes, Negligee.

INTIMATE APPAREL ACCESSORIES: **5 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: **6 Hours**

Principles, methods, technical aspects and controls of lamination, moulding and welding for production of intimate apparels.

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 Haggar, " 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.

U13FT*E*202 HOME FURNISHINGS

L	T	P	C
3	0	0	3

Course Objectives

- To gain knowledge on importance and market trends in home furnishings
- To impart knowledge on types, design and development, care and maintenance of different types of home furnishings

Course Outcomes

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

- Acquire knowledge about the varieties of home furnishing materials and finishing methods
- Developing skills in the selection of different varieties of home furnishing materials in terms of sizes, shapes and patterns and construction methods.
- Trace the knowledge on suitability of home furnishing linens for different end use

Course Content

INTRODUCTION: 9 Hours

Introduction of Textile Furnishing - definition – different type of furnishing materials – Woven and non-woven – Factors affecting selection of home furnishing – fibre, fabric and value added finishing for home furnishings - soil repellency, mosquito repellency, flame proofing, dust repellency, antimicrobial 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 and Wall coverings – types.

FLOOR COVERING: 5 Hours

Floor covering - types – Hard floor covering, resilient floor coverings, 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 bed linen.

Bath linen –types - towel, mats. Care and maintenance of bath linen.

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

Total: 45 Hours

REFERENCES

1. Jay Diamond and Ellen Diamond, "Fashion Apparel, Accessories, Home Furnishings", Pearson Prentice Hall, New Jersey, 2007.
2. Hamlym, "Bed and Table linen", Octopus Publishing Group Ltd, Newyork 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, Newyork, 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.

U13FT*E*203 FASHION COMMUNICATION AND MARKETING

L	T	P	C
3	0	0	3

Course Objectives

- To summarize about the principles of marketing, market research and communication
- To describe the fashion product development, fashion and marketing communication process.

Course Outcomes

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

- Appreciate the significance of fashion communication theories of clothes and their various functions
- Understand the various dimensions of fashion and its impact on society
- Describe a market according to its size, structure and market environment
- Demonstrate knowledge on designing appropriate marketing research, collect data and analyze data to interpret the required data from the market
- Describe the types and process of fashion forecasting
- Understand the significance and classification of fashion products and new product development and marketing communication strategy

Course Content

FASHION COMMUNICATION **9 Hours**

Fashion and Anti fashion, Function of Fashion Clothing - Material function – protection, modesty and concealment, immodesty and attraction. Cultural functions – individuality expressions, social status, social role, economic status, political status, religious status.

FASHION AND SOCIETY: **9 Hours**

Fashion and modernity, fashion and post modernity, masquerade fashion and allegory, fashion and pastiche, fashion and bricolage, fashion and ambivalence.

INTRODUCTION TO FASHION MARKETING: **5 Hours**

Definition of Fashion- Fashion marketing – Development of Fashion market – Size, Structure – marketing environment - micro marketing, macro marketing environment.

FASHION MARKETING RESEARCH: **6 Hours**

Purpose of 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: **7 Hours**

Definition of fashion forecasting, Types of forecasting – long term and short term, Process of fashion forecasting, 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.

FASHION PRODUCT DEVELOPMENT: **9 Hours**

Fashion Products and its importance – Fashion Industry and new Product Development

FASHION MARKETING COMMUNICATION: Fashion advertising, Sales promotion, Public relations, celebrity endorsement and sponsorship, personal selling, visual merchandising to visual marketing.

Total: 45 Hours

REFERENCES

1. Malcolm Barnard "Fashion as communication", Routledge Taylor & Francis Group, 2002
2. Mike Easey, "Fashion Marketing", Blackwell Science, 2000.
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", Kozan Page, London, U.K. 2005.
5. Agins, T. "The end of Fashion; How Marketing Changed the Clothing Business Forever", Perennial, 2000.
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 Mc Graw Hill, 2001.
8. John M Penrose, Robert W Rasberry, Robert J. Myers, "Advanced Business Communication", South Western Publication Company, 2001

U13GST003 PRINCIPLES OF MANAGEMENT

L	T	P	C
3	0	0	3

Course Objectives

- To study the importance and functions of management in an organization
- To study the importance of planning and also the different types of plan
- To understand the different types of organization structure in management
- To understand the basis and importance of directing and controlling in management
- To understand to the importance of corporate governance and social responsibilities.

Course Outcomes

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

- Understand the concepts of management, administration and the evolution of management thoughts.
- Understand and apply the planning concepts.
- Analyze the different organizational structures and understand the staffing process.
- Analyze the various motivational and leadership theories and understand the communication and controlling processes.
- Understand the various international approaches to management

Course Content

MANAGEMENT CONTEXT **9 Hours**

Management – Definition – Importance – Functions – Skills required for managers - Roles and functions of managers – Science and Art of Management –Management and Administration.
Evolution of Classical, Behavioral and Contemporary management thoughts.

PLANNING **9 Hours**

Nature & Purpose – Steps involved in Planning – Forms of Planning – Types of plans – Plans at Individual, Department and Organization level - Managing by Objectives. Forecasting – Purpose – Steps and techniques. Decision-making – Steps in decision making.

ORGANISING **9 Hours**

Nature and Purpose of Organizing - Types of Business Organization - Formal and informal organization – Organization Chart – Structure and Process – Strategies of Departmentation– Line and Staff authority – Benefits and Limitations. Centralization Vs De-Centralization and Delegation of Authority. Staffing – Manpower Planning – Recruitment – Selection – Placement – Induction.

DIRECTING & CONTROLLING **9 Hours**

Nature & Purpose – Manager Vs. Leader - Motivation - Theories and Techniques of Motivation.
Leadership – Styles and theories of Leadership.
Communication – Process – Types – Barriers – Improving effectiveness in Communication.
Controlling – Nature – Significance – Tools and Techniques.

CONTEMPORARY ISSUES IN MANAGEMENT **9 Hours**

Corporate Governance Social responsibilities – Ethics in business – Recent issues.
American approach to Management, Japanese approach to Management, Chinese approach to Management and Indian approach to Management.

Total: 45 Hours

REFERENCES

1. Tripathy PC And Reddy PN, "Principles of Management", Tata McGraw-Hill, 4th Edition, 2008.
2. Dinkar Pagare, "Principles of Management", Sultan Chand & Sons, 2000.
3. Kanagasapapathi. P, Indian Models of Economy, Business and Management, Prentice Hall of India, New Delhi, ISBN: 978-81-203-3423-6, 2008
4. G.K.Vijayaraghavan and M.Sivakumar, "Principles of Management", Lakshmi Publications, 5th Edition, 2009.
5. Harold Koontz & Heinz Weihrich, "Essentials of Management – An International perspective", 8th edition. Tata McGraw-Hill, 2009.
6. Charles W.L. Hill and Steven L McShane – Principles of Management, Tata Mc Graw-Hill, 2009.

L	T	P	C
3	0	0	3

U13GST004 OPERATIONS RESEARCH

Course Objectives

- Apply knowledge of OR techniques to domain specific industrial situations to optimize the quality of decisions
- Conduct investigations by the use of OR techniques

Course Outcomes

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

- Apply linear programming model and assignment model to domain specific situations
- Analyze the various methods under transportation model and apply the model for testing the closeness of their results to optimal results
- Apply the concepts of PERT and CPM for decision making and optimally managing projects
- Analyze the various replacement and sequencing models and apply them for arriving at optimal decisions
- Analyze the inventory and queuing theories and apply them in domain specific situations.

Course Content

LINEAR MODEL **9 Hours**

The phases of OR study – formation of an L.P model – graphical solution – simplex algorithm – artificial variables technique (Big M method, two phase method), duality in simplex.

TRANSPORTATION AND ASSIGNMENT MODELS **9 Hours**

Transportation model – Initial solution by North West corner method – least cost method – VAM. Optimality test – MODI method and stepping stone method.
Assignment model – formulation – balanced and unbalanced assignment problems.

PROJECT MANAGEMENT BY PERT & CPM **9 Hours**

Basic terminologies – Constructing a project network – Scheduling computations – PERT - CPM – Resource smoothening, Resource leveling, PERT cost.

REPLACEMENT AND SEQUENCING MODELS **9 Hours**

Replacement policies - Replacement of items that deteriorate with time (value of money not changing with time) – Replacement of items that deteriorate with time (Value of money changing with time) – Replacement of items that fail suddenly (individual and group replacement policies).
Sequencing models- n job on 2 machines – n jobs on 3 machines – n jobs on m machines, Traveling salesman problem.

INVENTORY AND QUEUING THEORY **9 Hours**

Variables in inventory problems, EOQ, deterministic inventory models, order quantity with price break, techniques in inventory management.
Queuing system and its structure – Kendall's notation – Common queuing models - M/M/1: FCFS/∞/∞ - M/M/1: FCFS/n/∞ - M/M/C: FCFS/∞/∞ - M/M/1: FCFS/n/m

Total: 45 Hours

REFERENCES

1. Taha H.A., "Operation Research", Pearson Education, 2008
2. Hira and Gupta "Introduction to Operations Research", S.Chand and Co.2002
3. Hira and Gupta "Problems in Operations Research", S.Chand and Co.2008
4. Wagner, "Operations Research", Prentice Hall of India, 2000
5. S.Bhaskar, "Operations Research", Anuradha Agencies, Second Edition, 2004

ELECTIVE - III
(Semester VII)

U13FTE301 CREATIVITY, INNOVATION, AND NEW PRODUCT DEVELOPMENT

L	T	P	C
3	0	0	3

Course Objectives

- To impart knowledge on the concept of product design and development
- To impart knowledge on feasibility and evaluation of new product.
- To impart knowledge on proto type creation and testing. Patent laws.
- To educate on market research.

Course Outcomes

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

- Acquire knowledge on various factors affecting process of innovation and creativity
- Acquire knowledge on evaluations of project plan, new product development and IPR
- Develop skills on various techniques to improve creativity

Course Content

CREATIVITY: **9 Hours**

Concept and history of creativity, need for creativity, creative environment, stages of creativity process, creativity and intelligence, creativity in various contexts, economic view of creativity, measuring creativity, fostering creativity, creative problem solving – brain storming and various techniques, lateral thinking.

INNOVATION: **9 Hours**

Definition, creativity vis-à-vis innovation, conceptualizing innovation, types of innovation, sources of innovation, goals of innovation, process of technological innovation, diffusion of innovation, factors contributing to successful technological innovation, failure of innovations, innovation management, measures of innovation.

PROJECT PLANNING AND EVALUATION: **9 Hours**

Definition and purpose of project, collection of ideas, screening ideas, selection criteria for new projects, development of project plan, project evaluation – purpose, kinds of evaluation, stages of evaluation process, techniques of project evaluation, project analysis, benefits and risks of new projects.

PRODUCT DEVELOPMENT AND EVALUATION: **9 Hours**

Research and new product development – process and types of new products, creative design, design of prototype – purpose, process, and types, model preparation, testing and quality evaluation; marketing research – purpose and process, types and methods; introducing new products, cost evaluation.

PROTECTION OF INNOVATION: **9 Hours**

Intellectual property (IP), classes of IP – industrial property and copyrights; Intellectual Property Rights (IPR); Patents, patentability, patent acts, governing laws, history of patent laws and acts, patent administration; patenting process – patent application, patent search, prosecution, publication, examination, opposition, grant, renewal, patent rights; international code for patents, patents vis-à-vis economics.

Total: 45 Hours

REFERENCES

1. Tom Kelly, The Art of Innovation, Doubleday, Random House Inc. USA, 2001.
2. Managing Creativity and Innovation (Harvard Business Essentials), Harvard Business School, 2003.
3. Brain Twiss, "Managing Technological Innovation", Pitman Publishing Ltd., 1992.
4. Harry B. Watton, "New Product Planning", Prentice Hall Inc., 1992.
5. Paul Birch and Brian Clegg, Business Creativity – A Guide for Managers, Kogan Page, London,1995,
6. Leigh L. Thompson, Hoon Seok Choi, Creativity and Innovation in Organizational Teams, Lawrence Erlbaum Associates, USA, 2006.
7. Paul E. Plsek, Creativity, Innovations and Quality, Irwin Professional, USA, 1997.
8. Alan G. Robinson, Sam Stern, Corporate Creativity: How Innovation and Improvement Actually Happen, Berrett-Koehler Publishers, USA, 1998.

U13FT*E*302 LOGISTICS AND SUPPLY CHAIN MANAGEMENT

L	T	P	C
3	0	0	3

Course Objectives

- To enable students to understand the concept of logistics and supply chain management
- To understand the principle, process and best practices of demand management
- To impart knowledge on application of IT in SCM
- To be familiar with Distribution Network Planning
- To know about emerging trends in SCM

Course Outcomes

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

- Demonstrate the importance of logistics and supply chain management and its value for competitive advantage of the firm,
- Analyze and interpret the supply chain, the role of its actors and its logistics flows and function,
- Critically assess techniques related to logistics and supply chain management required by garment industry,

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, inbound and outbound logistics – suppliers to manufacturers, manufacturers to consumers. Logistics management - design and management, integrated supply chain, pull and push strategy. Demand management - demand forecasting and shaping. Bull wick 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. World class 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 pack- ages – 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 – ware housing, transportation cost, transportation decision and futuristic direction in trans- portation. Location strategy – plant location, distribution problem, ware house 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. .

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", Mc Graw 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.

U13FTE303 FUNCTIONAL CLOTHING

L	T	P	C
3	0	0	3

Course Objectives

- To acquire knowledge on functional requirements of clothing and factors influencing functional performance of clothing.
- To understand the fibres, fabrics and technology adopted in medical textiles, protective clothing.
- To acquire knowledge on functional requirements of sportswear. Fibres, fabrics and techniques used in sportswear manufacture
- To understand the application of smart wears. Methods of modifying fibre and fabric properties for smart wear applications.

Course Outcomes

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

- Acquire knowledge on defining design specifications and steps involved in designing functional clothes
- Recognize the classification and design requirements of various functional clothing like medical wear, protective wear, sportswear, smart and intelligent wear
- Apply the knowledge on textiles materials and processes to derive the specifications processes in designing functional clothing
- Acquire knowledge on the evaluation methods and standards available to evaluate the various functional clothing

Course Content

INTRODUCTION: **8 Hours**

Design logic of apparels-aesthetic and functional properties, fit and comfort of apparels. Functional clothing - Classification, Design, engineering and Pattern engineering

MEDICAL WEAR: **8 Hours**

Classification of medical textiles and their functions – Textile materials used for implants and non-implants, extracorporeal 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 protective clothing – electrical protective clothing and radiation protection.

SPORTS WEAR: **10 Hours**

Clothing requirements for sportswear- Identifying the needs of the end-user- design development process: Application of technical textiles suitable for sportswear; Footwear Clothing - Design, fit, materials, components and their functions.

SMART AND INTELLIGENT TEXTILES: **10 Hours**

Smart fibres: Nano fibres, Photo adaptive fibres, Chameleon fibres, Conductive fibres – properties and applications in textiles and apparels. Phase change materials: production and applications. Shape memory polymers and properties. Stimuli sensitive intelligent textiles, Smart textiles incorporating functional devices.

Total: 45Hours

REFERENCES

1. Horrocks A. R. and Anand S. C, "Handbook of Technical Textiles", The Textile Institute, Woodhead Publications, Cambridge, UK, 2000
2. Adanur S., Wellington Sears "Handbook of Industrial Textiles", Technomic Publishing Co. Lanchester, USA, 1995
3. Vigo T. L., Intelligent Fibres, Journal of Textile Institute , 90, Part 3, Textile Institute, 1999
4. Anand S., "Medical Textiles", Textile Institute, UK, 1996
5. Sanjay Gupta, "Smart Textiles – Their Production and Marketing Strategies", Bhumica Printers, New Delhi, 2000
6. Tao X., "Smart Fibres, Fabric and Clothing", Textile Institute, Woodhead Publishing Limited, Cambridge, 2001

U13FT*E*304 FASHION RETAIL MANAGEMENT

L	T	P	C
3	0	0	3

Course Objectives

- To acquire knowledge on concepts of retail market, types of retail market and structure of retail business.
- To gain inputs on merchandise management in retail sector.
- To understand the basics of retail store location and in-store space management
- To gain knowledge on retail pricing strategies.

Course Outcomes

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

- Gain knowledge on the fundamentals of retailing
- Develop an understanding of customer behavior and retailing
- Acquire Knowledge on management of merchandise
- Understand the importance of effective location and space management for retailing
- Develop an understanding of retail pricing and strategies in promotional activities

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, 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.

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, stores pace management, walls as retail selling tools, colour planning, 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.

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

Total: 45 Hours

REFERENCES

1. Mike Easey , “Fashion Marketing “, Blackwell Scientific Publications, 2002
2. Gibson G. Vedamani, “Retail Management Functional Principles and Practices”, Jaico Publishing House, Second Edition, 2002
3. Nair Suja. R, "Retail Management", Himalaya Publishing House, 2008.
4. Bajaj Chetan Srivatsa Tuli, "Retail Management", Oxford University Press, 2008.
5. Fleming Peter, "A Guide to Retail Management": Advice on retail operation, customer service and sales team, Jaico Publishing House , Mumbai, 2007.
6. Gopal, "Retail Management: An Introduction", ICFAI University press, 2006.

U13GS*T*002 TOTAL QUALITY MANAGEMENT

L	T	P	C
3	0	0	3

Course Objectives

- Acquire knowledge on TQM concepts
- Acquire knowledge on quality systems
- Develop skills to use TQM tools for domain specific applications

Course Outcomes

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

- Understand quality concepts and philosophies of TQM
- Apply TQM principles and concepts of continuous improvement
- Apply and analyze the quality tools, management tools and statistical fundamentals to improve quality
- Understand the TQM tools as a means to improve quality
- Remember and understand the quality systems and procedures adopted

Course Content

INTRODUCTION: **9 Hours**

Definition of Quality, Dimensions of Quality, Quality costs, Top Management Commitment, Quality Council, Quality Statements, Barriers to TQM Implementation, Contributions of Deming, Juran and Crosby, Team Balancing

TQM PRINCIPLES: **9 Hours**

Customer satisfaction – Customer Perception of Quality, Customer Complaints, Service Quality, Customer Retention, Continuous Process Improvement,5S, Kaizen, Just-In-Time and TPS

STATISTICAL PROCESS CONTROL: **9 Hours**

The seven tools of quality, New seven Management tools, Statistical Fundamentals – Measures of central Tendency and Dispersion, Population and Sample, Normal Curve, Control Charts for variables and attributes, Concept of six sigma.

TQM TOOLS: **9 Hours**

Quality Policy Deployment (QPD), Quality Function Deployment (QFD), Benchmarking, Taguchi Quality Loss Function, Total Productive Maintenance (TPM), FMEA

QUALITY SYSTEMS: **9 Hours**

Need for ISO 9000 and Other Quality Systems, ISO 9001:2008 Quality System – Elements, Implementation of Quality System, Documentation, Quality Auditing, ISO 14001:2004

Total: 45 Hours

REFERENCES

1. Dale H.Besterfiled, "Total Quality Management", Pearson Education, 2011.
2. James R.Evans & William M.Lidsay, "The Management and Control of Quality", South-Western (Thomson Learning), 2008.
3. Feigenbaum.A.V. "Total Quality Management", McGraw Hill,1991.
4. Oakland.J.S. "Total Quality Management", Butterworth – Hcinemann Ltd., Oxford,1989.
5. Narayana V. and Sreenivasan, N.S. "Quality Management – Concepts and Tasks", New Age International, 2007.
6. Zeiri, "Total Quality Management for Engineers", Wood Head Publishers, 1991.

ELECTIVE – IV
(Semester VIII)

U13FTE401 APPLICATION OF COMPUTERS IN APPAREL INDUSTRY

L	T	P	C
3	0	0	3

Course Objectives

- To impart knowledge on CAD / CAM applications in Apparel designing and manufacturing
- To impart knowledge on Computer application in Apparel Production Planning and Control

Course Outcomes

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

- Acquiring knowledge on basics of computer, CAD / CAM applications in apparel design and in manufacturing.
- Identify and apply the CAD / CAM process in apparel designing and manufacturing.
- Analyse the designs and developing new designs and requirements.
- Acquire knowledge on different types of management systems in computer aided applications.

Course Content

COMPUTER BASICS: 7 Hours

Introduction to Computer fundamentals –computer specifications, Input, output, and storage technologies. Computer Software – Application software, system software, commercial software, graphics software – vector and raster graphics. Computer network: LAN/WAN, Web and email.

COMPUTER AIDED TEXTILE DESIGN SYSTEMS- TEXTILE CAD: 11 Hours Warp and Weft design, Simulation of colour and weave effect - Plain and stripe effect, automatic peg plan and draft generation; Weave construction library – Knitting Design CAD – features and process in knit designing. Print design CAD: Touch up and production of mask films; automatic repeats and half drop generation, colour separation. Embroidery Design CAD: features and process of punching software.

COMPUTER AIDED FASHION AND PATTERN DESIGN SYSTEMS: 9 Hours

Illustration, garment designing and texture mapping, story board and cataloguing, Virtual Garmenting. 3D Body Measurement System –Digitizer -Pattern Drafting system- Grading – grade rule table - Marker planning.

COMPUTER AIDED GARMENT PRODUCTION SYSTEMS: 11 Hours

Computer application in fabric defect checking, computerized fabric laying and cutting. Principle of Radio frequency tagging- Application in material handling, cutting and ware house storage. Application of Automation and pneumatics in production and finishing machines - sewing, fusing, pressing, work aids, stackers, folding and finishing. UPS system- Robotics.

COMPUTER AIDED MANAGEMENT SYSTEMS: 7 Hours

E-prototyping in garments – Electronic catalogues – E-commerce and M- commerce in apparel industry – Enterprise Resource Planning (ERP), Electronic Data Interchange (EDI), Management Information System (MIS).

Total: 45 Hours

REFERENCES

1. Rence weiss chase, CAD for fashion Design", Prentice Hall Inc., 1997.
2. Winfred Aidrich,"CAD in Clothing and Textiles", Blackwell Science Ltd., 1994.
3. Patric Taylor,"Computer in the Fashion Technology", Om Book Service,1997.
4. Sigmon, D.M., Grady P.L. and Winchester S.C, "Computer Integrated Manufacturing and total quality management", Textile Progress, Vol. 27, No.4, 1998, ISBN: 1870372166.

U13FT*E*402 LEATHER APPAREL TECHNOLOGY

L	T	P	C
3	0	0	3

Course Objectives:

- To facilitate understanding of classification of leather materials and process of preparing leather for manufacture leather apparels.
- To assist in gaining knowledge on designing leather apparels
- To assist in gaining knowledge on types of machineries and equipments used in manufacture of leather apparel

Course Outcomes

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

- Understand the classification of leather materials and process of preparing leather for manufacture leather apparels
- Gain knowledge on designing leather apparels
- Gain knowledge on types of machineries and equipments used in manufacture of leather apparel

Course Content

LEATHER TANNAGES: **9 Hours**

Principles and practices, preservation techniques: Soaking, Liming, deliming, bating, and pickling. Different methods of pertaining processes: light, heavy and Industrial leathers. Types of Tannages: Vegetable, synthetic. Tannage mechanism. Post tanning operations: Neutralisation, bleaching processes and dyeing. Types of leathers: E.I.,tanning of kips , buffcalf, calf and goat and sheep skins, sole leather, chrome sole leather, picking band leathers and pickers.

LEATHER PROCESSING: **12 Hours**

Processes and principles involved in manufacture of following types of leather - Wetblue leathers - Full Chrome Upper leathers - Upholstery leathers lining leathers - Harness, Belting and Saddlery leathers. - Football, hockey ball, cricket ball and other sports goods leathers - Chamois leather Fashion garment leathers - Utility glove leathers. Principle methods and mechanism of drying of leathers.

CLASSIFICATION AND TYPES OF LEATHER GARMENTS: Classification of leather garments**,** based on material design, uses and fashion, anatomy of human body. Types of figures and age group. Principles of Tailoring. Emphasis of sizes, measurements and fitting. Different types of leather garments, Grain garments, Suedes, Fur leather from sheep, goat, cow, calf, chrome, semi - chrome. Combination tanned leather.

PROPERTIES AND CHARACTERISTICS OF LEATHER GARMENTS: general properties of leather such as feel, texture, resistance, rub resistance, uniformity of shades, lining and padding materials, fasteners, grinderies, thread and decorated fitting.

TOOLS, EQUIPMENT, AND MACHINERY: **7 Hours**

Machines used in garment manufacturing such as Industrial sewing machine – Single & Double, Cloth cutting machine, Button hole & button stitching machine and Ironing process. Tools used for garment manufacturing such as gimping scissors, wooden & iron hammer, stone slabs, measuring tapes, measuring instruments (L square), Shaper, Crayons, Special furniture required for garment unit and dummy for checking fitting.

APPAREL DESIGNING: **9 Hours**

Preparation of sectional patterns, Arrangements of patterns to minimize the wastage of leathers. Recovery of wastage and its utilization. Designing and fabrication of garments, gloves, cap coat, pant etc. Shoe: Selection of leather, upper closing lasting and conditioning. Designing and fabrication of shoes.

SEQUENCE OF OPERATION: **8 Hours**

Principle of cutting components, colour matching, texture feel, type of stitching, and attachment, Sequence of operation for assembly of components for garment manufacturing.

QUALITY CONTROL IN LEATHER GARMENTS: In process checking and final checking of measurements, get up and overall quality of free hand sketching and drafting and preparation of pattern.

Total: 45 Hours

REFERENCES:

1. Grace I, Kunz and Ruth E. Glock, "Apparel Manufacturing: Sewn Product Analysis", Prentice Hall, Fourth Edition, 2004.
2. Dutta.S S, "An Introduction to the Principles of Leather Manufacture", Fourth Edition, Indian Leather Technologists Association, Calcutta, 2002.
3. Sandy Scrivano,"Sewing with Leather & Suede", Lark Books, 2002.
4. Thomas C,Thorstensen,"Practical Leather Technology", Krieger Publishing Company, 2001.
5. Mary Maguire, "Leather Work", Lawrence Publication House, 2000.

U13FT*E*403 APPLICATION OF ERP AND MIS IN APPAREL INDUSTRY

L	T	P	C
3	0	0	3

Course Objectives

- To understand the basic concepts and applications of ERP and its modules
- To acquire knowledge on ERP application of business process reengineering and management
- To understand application of information technology in management information systems and business communication.

Course Outcomes

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

- Acquire knowledge on basics of ERP and MIS.
- Acquire knowledge on the application and modules of ERP in apparel Industry.
- Acquire Application strategy of Information Systems in apparel industry.
- Develop knowledge on internet and electronic commerce and their day to day importance.
- Describing and developing knowledge on transforming Information systems to the business operations

Course Content

INTRODUCTION: **9 Hours**

An overview and features of ERP, MIS integration, ERP drivers, Trends in ERP, ERP in India. ERP system perspective – Management Information System, Operations Support System, Transaction Processing System, Network Structure of ERP system, ERP work flow, 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 Life cycle, 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.

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 McGraw Hill, New Delhi, 2005.
3. Alexis Leon, "ERP Demystified", 1st edition, Tata McGraw Hill, 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 McGraw Hill, New Delhi, 2004.

U13FTE404 TECHNICAL TEXTILES

L	T	P	C
3	0	0	3

Course Objectives

- To impart knowledge on different application of technical textiles
- To understand the mechanism of different applications achieved with textiles.

Course Outcomes

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

- Acquire knowledge on the principles of engineering applied in the manufacture of technical textiles and apply the same in apparel engineering processes.
- To analyze and identify required parameters vital to design and manufacture apparel products with technical application suiting the needs of the customer.
- To be able to use and create textiles for new applications

Course Content

8 Hours

TECHNICAL TEXTILES: Definition and scope of technical textiles, Classification.

TECHNICAL FIBRES: High strength and modulus organic fibres – High chemical and thermal resistance organic fibres. High performance inorganic fibres – Ultra fine and Novelty fibres.

9 Hours

AGRO TEXTILES: Textiles for crop covers, bird netting, soil mats and silos. Shade fabrics and textiles for green houses.

GEO TEXTILES: Types and application of geo synthetics. Functions and application areas of geo textiles. Mechanics of reinforcement, filtration and drainage by geo textiles.

9 Hours

MEDICAL TEXTILES: Non implantable materials, Extra corporeal devices – Implantable materials - Health care / hygiene products.

TRANSPORTATION TEXTILES: Application of textiles in automobiles. Requirement and design for pneumatic tyres, airbags and belts. Textiles in passenger cars, other road vehicles , Rail applications , Air crafts , Marine application

10 Hours

PROTECTIVE TEXTILES: Waterproof fabrics – breathable fabrics – Fire protection – Heat and cold protection – Ballistic protective clothing – Camouflage textiles – NBC protection

SPORTS TEXTILES -Sports clothing and Equipment- Design and materials used in sports active wear. Textile components of sports shoes. Sport surfaces and Equipment.

9 Hours

TEXTILES IN FILTRATION: Dust collection, Solid-liquid separation, liquid – liquid filtration, liquid-gas separation, Mechanism of filtration, Fabric construction, Finishing treatments,

PACKAGE TEXTILES: Textiles in food packaging. Fabrics for bags and luggage. Flexible Intermediate Bulk Packing.

Total: 45 Hours

REFERENCES:

1. Sabit Adanur and Wellington Sears, “Handbook of Industrial Textiles”, Technomic Publishing company Inc., USA, 1995.
2. A. R. Horrocks and S. C. Anand, “Handbook of Technical Textiles”, Woodhead Publishing Limited and the Textile Institute, 2000.
3. S.K. Mukhopadhyay & J.F. Partridge, “Automotive Textiles”, Textile Progress, Vol.29, No.1/2, the Textile Inst. Publication, 1999.
4. Dr. V K Kothari, “Progress in Textiles : Science and Technology”, Vol 3, Technical Textiles Technology, Development & Applications , IAFL Publications, New Delhi, 2008.
5. Fung & Warner, “Textiles in Automobile Engineering” Woodhead Publishing, ISBN: 978-1-85573-493-7, 2000.
6. K.L. Floyd, “Industrial Application of Textiles”, Textile Progress Vol.6 No.2 the Textile Institute Publication, 2009.
7. Medical Textile – International Conference, Bolton UK, 2007.

U13FTE405 GLOBAL MARKETING AND SOURCING STRATEGIES

L	T	P	C
3	0	0	3

Course Objectives

- To understand the global marketing practices
- To understand the global sourcing strategies
- To understand the future global marketing practices

Course Outcomes

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

- Able to do global marketing of products and services
- Able to do global sourcing of products and services

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 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.

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.

Total: 45 Hours

REFERENCES

1. Warren.J.Keegan, “Global Marketing Management”, 7th Edition, Prentice Hall of India, New Delhi, 2008.
2. Johany. K.Johansson, “Global Marketing”, Second Edition, Irwin McGraw Hill, 1995.
3. Subash C, Jain, “International Marketing”, Sixth Asian books (P) Ltd, South Western Thomson learning, 1993.
4. Cateora, “Organisations Structures”, Tenth Edition, McGraw Hill, 1997.
5. Sudhi Sheshadri “Sourcing Strategy”, Principles, Policy and Design , Springer, 2005.

ELECTIVE - V
(Semester VIII)

U13FTE501	NONWOVENS	L T P C 3 0 0 3

Course Objectives

- To gain knowledge about the nonwoven manufacturing techniques.
- To impart knowledge on the nonwoven process and applications.
- To gain knowledge about testing of nonwovens.

Course Outcomes

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

- To acquire knowledge on nonwoven manufacturing techniques.
- To acquire knowledge on testing and applications of nonwovens.

Course Content

INTRODUCTION TO NONWOVEN: 9 Hours

Nonwovens: Introduction, Definition, Fibres used in nonwovens, Classification of web laying and web bonding systems, Comparison of woven, knitted and nonwoven structures. Nonwoven properties including environmental considerations. Nonwoven applications in technical garments.

WEB FORMATION TECHNIQUES: 9 Hours

Dry laid web Formation: Raw material - Fibre Opening – Carding – Cross lapping - perpendicular-laid web formation - Airlaid web formation: Air laying technology - bonding systems & finishing - properties & applications. Wet-laid web formation: Raw materials – fibre preparation – web forming technology – bonding systems – finishing- properties & applications. Polymer laid web formation: Spun bonding and Melt blown process: raw material - production technology – structure and properties – application.

WEB BONDING TECHNIQUES: 9 Hours

Mechanical Bonding: Stitch bonding, Needle Punching: principle- various factors influencing needle punching process – properties and applications. Thermal Bonding: principle – raw materials – structure and properties – applications.

Chemical Bonding: Chemical binders – mechanism of chemical bonding – methods of binder application – drying – Limitations and applications.

FINISHING OF NONWOVENS: 9 Hours

Wet Finishing: Washing, coloration – dyes, dyeing machines; printing. Application of Chemical Finishes- antistatic agents, antimicrobial finishes, softening, flameproof, waterproof, stiffeners, UV stabilizers

Methods for applying chemical finishes- padding, coating, lamination. Mechanical Finishing-splitting and winding, perforating, drying, compressive finishes, calendaring; Surface finishing-singeing, shearing, flocking, raising, polishing, softening. Development in nonwoven finishing.

TESTING OF NONWOVEN: 9 Hours

Testing of Nonwoven fabrics: weight, thickness, fibre orientation, fabric porosity, pore size & pore size distribution, dry sieving, wet sieving, hydrodynamic sieving, bubble point test method, measuring tensile properties, measuring gas and liquid permeability, measuring water vapour transmission, measuring wetting and liquid absorption, measuring thermal conductivity and insulation

Total: 45 Hours

REFERENCES

1. Hand Book of Nonwovens – Edited by S.J.Russell, Wood head publications Ltd., ISBN- 13: 978-1-85573-603-0, 2007.
2. Nonwoven Fabrics: Raw Materials, Manufacture, Applications, Characteristics, Testing Processes, Edited by Wilhelm Albrecht , Hilmar Fuchs and Walter Kittelmann, WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim,, ISBN: 3-527-30406-1, 2003.
3. Hand Book of Technical Textiles – Edited by S.C.Anand & A.R.Horrocks, Wood head publications Ltd., ISBN 1 85573 385 4, 2000.
4. Applications of Nonwovens in Technical textiles, Edited by R.A.Chapman, CRC press, 2010.

U13FTE502 PRODUCT ENGINEERING AND PLANT LAYOUT

L	T	P	C
3	0	0	3

Course Objectives

- To impart knowledge on techniques of product and production process analysis and control
- To impart knowledge on product analysis with respect to quality, standards and cost
- To impart knowledge on production process evaluation, control and manufacturing information systems work study

Course Outcomes

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

- Acquire knowledge in apparel product analysis, production control and management
- Develop skills to identify, analyze, and solve technical problems using appropriate methodologies and tools.
- To consider different domain contribution for designing and management of efficient apparel management

Course Content

PRODUCT ANALYSIS: **6 Hours**

Relationship between quality and construction of a seven product – geometric principles of draping, drafting and industrial patterns – product specifications.

PRODUCTION CONTROL AND ENGINEERING: **8 Hours**

Industrial engineering concepts – Development and application of standard data for pre-costing and factory scheduling – Basic production systems – production control charts. Manu- factoring Information system; Systems and procedures.

PRODUCTION MANAGEMENT ANALYSIS: **10 Hours**

Analysis of techniques for material utilization and cutting of raw materials for all types of sewn products principles and methods of costing, evaluation production problems in spreading, cutting and cost control.

PLANT LAYOUT: **11 Hours**

Definition – Types of production layout, criteria for evaluation of a plant layout, determining minimum space requirement, plant size location, Basic production layouts, Government regulations for plant layouts.

TIME AND MOTION STUDY: **10 Hours**

General approach for making a time and motion study, preliminary data for time and motion study sheet; sewing work study, Principles of work cycle timing methods, objectives of time study, statistical approaches – statistical calculation of time study – operator efficiency distributions. Evaluating motion study data – Principles for improving sewing and pressing operations.

Total: 45 Hours

REFERENCES

1. Jacob Solinger., "Apparel Manufacturing Handbook", Van Nostrand Reinhold Company, 1980
2. Bethel, Tann, Atwater and Rung., "Production Control" McGraw Hill Book Co., New York, 1948
3. Biegel, John. E., "Production Control – A Quantitative Approach" Prentice Hall Inc., 2nd edition. 1971
4. Immer, John. R., "Layout Planning Techniques" McGraw Hill, New York, 1950
5. Barnes, Ralph M., "Motion and Time Study", John Wiley and Sons, New York., 1958

U13FT*E*503 SOCIAL COMPLIANCE FOR APPAREL INDUSTRY

L	T	P	C
3	0	0	3

Course Objectives

- To facilitate understanding the importance of social compliance
- To impart knowledge on international conventions on social compliance
- To assist understanding the compliance norms for child labour, labour health and safety and wages
- To teach concepts of ethical trading and international compliance

Course Outcomes

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

- Acquire knowledge in apparel product analysis, production control and management
- Develop skills to identify, analyze, and solve technical problems using appropriate methodologies and tools towards optimum utilization of resources in apparel product and process development
- To consider different domain contribution for designing and management of efficient apparel management
- Effectively manage apparel business operations and project management teams

Course Content

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 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 enforced for safe working Environment., working hours- 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, collective bargaining, corruption and bribery – effect and risk in the supply chain. Global Reporting Initiatives (GRI) sustainability reporting guide line. Organization for Economics Co- operation of Development (OECD) guide lines for multi national discrimination.

WAGE COMPLIANCE: 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 labour practice. World wide Responsible Apparel Product (WRAP) purposes, Wrap Principle, certification process, SA 8000. 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 Rajesh Chhabara, “Social Accountability”, Ava softech Pvt. Ltd., 2005
2. Rebocak Leifziger, “SA 8000: The first decade”, Greech Leaf Publishers, May 2009.
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.

U13FT*E*504 APPAREL BRAND MANAGEMENT L T P C
3 0 0 3

Course Objectives

- To impart knowledge in branding and concepts applied in branding
- To facilitate understanding of the methods of brand building and brand extension
- To enable acquirement of knowledge on global branding principles and managing the brand
- To facilitate understanding the fundamentals of advertisement, creating an advertisement, media for advertisement and their evaluation.

Course Outcomes

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

- Acqiure knowledge on branding strategy and positioning
- Understand the brand building and extension strategies
- Demonstrate understanding of brand management and global branding
- Acquire knowledge on Advertising types and advertisement business
- Demonstrate ability to create advertisement message, select media, and work out budget.

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: 9 Hours

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.

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

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.

ELECTIVE - VI
(Semester VIII)

U13FT*E*601 ENTREPRENEURSHIP DEVELOPMENT

L	T	P	C
3	0	0	3

Course Objectives

- To study the factors affecting Entrepreneurship growth and their problems.
- To understand the importance of Entrepreneurial Development programmes.
- To study the projects identification, selection and formulation
- To understand the role of government in entrepreneurial development
- To understand the basis of intellectual property rights in India.

Course Outcomes

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

- Recognize the factors affecting Entrepreneurship growth and their problems.
- Outline the importance of Entrepreneurial Development programmes.
- Describe the projects identification, selection and formulation procedure
- Indicate the role of government in entrepreneurial development
- Underline the basis of intellectual property rights in India.

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

ENTREPRENEURIAL PROMOTION: 9 Hours

Motivation: Theories and factors – 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.

9 Hours

Role of government in entrepreneurial development – District Industry Centre and its role – Government incentives – financial and non-financial – Sectoral reservation for SSI and tiny sector.

PROPERTY 9 Hours

Definition and ownership-kinds of property-types of intellectual property-patent-trade marks – industrial design-need for protection for IP-WIPO and its activities-TRIPS Agreement-evoluation of IPR in India.

Total: 45 Hours

REFERENCES

1. Entrepreneurial Development by S S Khanka, S. Chand and Co: 2008 ISBN: 81-219-1801-4,
2. Intellectual Property Rights Text and Case, by Dr. R. Radhakrishnan and Dr.S. Balasubramanian, Excel Books, 2008, ISBN: 978-81-7446-609-9
3. Vasanth Desai "Dynamics of Entrepreneurial Development and Management" Himalaya Publishing House.2011
4. N.P.Srinivasan and G.P. Gupta "Entrepreneurial Development" Sultanchand and Sons.,2008
5. P.Saravanavelu "Entrepreneurship Development" Eskapee publications,2008.

6. S.S.Khanka “Entrepreneurial Development” S.Chand and Company Ltd.,2008
7. Satish Taneja, Entrepreneur Development ; New Venture Creation,2010
8. www.iprventure.com,

U13FT*E*602 ENERGY MANAGEMENT IN APPAREL INDUSTRY

L	T	P	C
3	0	0	3

Course Objectives

- To understand the importance and concepts of energy management. Global perspective on energy saving.
- To gain knowledge on energy auditing methods, control measures.
- To acquire knowledge on energy conservation techniques in various areas of manufacturing unit

Course Outcomes

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

- Recognize the need for Energy Management and Conservation
- Knowledge on Energy Audit and Energy Control
- Outline the Energy Conservation areas and methods in Factory
- Knowledge on the Developments in Energy Efficient Technologies
- Application Of Non Conventional Energy Sources

Course Content

ENERGY MANAGEMENT AND CONSERVATION: 7 Hours

Concept of energy management - need for energy conservation - Demand - Supply Management.

Global Energy Concerns: Global energy conservation scenario – energy conservation measures in India. United Nations Framework on sustainable development, Kyoto Protocol.

ENERGY MANAGEMENT AND AUDIT: 11 Hours

Definition of Energy Audit, need and types of energy audit, energy audit instruments. Understanding energy costs, bench marking energy performance, matching energy use to requirement, basic principles for optimizing the input energy requirements. Energy Management Department - Top management support, managerial function, roles and responsibilities of energy manager, accountability. Motivation of employees: Information system – overcoming barriers.

Energy Monitoring and Control: Cumulative Sum of Differences (CUSUM) of Energy production and consumption, Energy production and consumption monitoring and control, elements for monitoring, data analysis and control.

ENERGY CONSUMPTION ANALYSIS: 12 Hours

Methods for energy consumption analysis. Analysis for apparel manufacturing machineries and finishing equipments. Cost of energy Vs sales value of apparel product.

Energy Conservation in Factory: Energy saving opportunities with energy efficient motors. Factors affecting the electrical energy performance and energy saving opportunities. Factors affecting Refrigeration and Air conditioning system performance and saving opportunities. **Lighting System -** Light source, choice of lighting, luminance requirements, and energy conservation avenues. **Diesel Generating system -** Factors affecting selection, diesel energy conservation avenues. **Waste Heat Recovery -** Classification of waste heat. Source of waste heat in apparel industry. Commercially viable waste heat recovery devices, saving potential.

DEVELOPMENTS IN ENERGY EFFICIENT TECHNOLOGIES: 7 Hours

Maximum demand controllers, automatic power factor controllers, energy efficient motors, soft starters with energy saver, variable speed drives, energy efficient transformers, electronic ballast, and energy efficient lighting controls.

APPLICATION OF NON CONVENTIONAL ENERGY SOURCES: 8 Hours

Scope of application of non-conventional energy - Solar energy: different type of collectors — photovoltaic cells. Wind energy, Bio energy, environmental impact on energy and co-generation by using different techniques.

Total: 45 Hours

REFERENCES

1. Kalyanaraman. A.R, “Energy Conservation in Textile Industries”, SITRA 1995 (Revised)
2. Palaniappan.C et al, “Renewable Energy Applications to Industries”, Narose Publishing House, New Delhi, 1998.
3. "Energy Management" PCRA Monograph.
4. Pradeep Chaturvedi and Shalini Joshi, “Strategy for Energy Conservation in India”, Concept Publishing Co., New Delhi, 1995.
5. Proceedings of International Seminar cum Exhibition ASIA Energy Vision 2020 — Sustainable Energy Supply, November 15-17, 1996
6. Proceedings of 12 Shirley International Seminar, “Profitable Energy Savings in the Textile Industry”, September 16-18, 1980
7. Proceedings of the Seminar, “Strategies for Sustainability of Energy Efficient and environmental Friendly Technologies in Small and Medium Scale Sector”, PSG College of Technology, November 24, 2000.
8. Proceedings of All India Workshop, “Latest Trends in Energy Audit Systems”, Institution of Engineers (I), December 12-13, 1993.

U13GST005 ENGINEERING ECONOMICS AND FINANCIAL MANAGEMENT

L	T	P	C
3	0	0	3

Course Objectives

- Acquire knowledge of economics to facilitate the process of economic decision making
- Acquire knowledge on basic financial management aspects
- Develop the skills to analyze financial statements

Course Outcomes

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

- Evaluate the economic theories, cost concepts and pricing policies
- Understand the market structures and integration concepts
- Understand the measures of national income, the functions of banks and concepts of globalization
- Apply the concepts of financial management for project appraisal
- Understand accounting systems and analyze financial statements using ratio analysis

Course Content

ECONOMICS, COST AND PRICING CONCEPTS 9 Hours

Economic theories – Demand analysis – Determinants of demand – Demand forecasting – Supply – Actual cost and opportunity cost – Incremental cost and sunk cost – Fixed and variable cost – Marginal costing – Total cost – Elements of cost – Cost curves – Breakeven point and breakeven chart – Limitations of break even chart – Interpretation of break even chart – Contribution – P/V-ratio, profit-volume ratio or relationship – Price fixation – Pricing policies – Pricing methods

CONCEPTS ON FIRMS AND MANUFACTURING PRACTICES 9 Hours

Firm – Industry – Market – Market structure – Diversification – Vertical integration – Merger – Horizontal integration

NATIONAL INCOME, MONEY AND BANKING, ECONOMIC ENVIRONMENT 9 Hours

National income concepts – GNP – NNP – Methods of measuring national income – Inflation – Deflation – Kinds of money – Value of money – Functions of bank – Types of bank – Economic liberalization – Privatization – Globalization

CONCEPTS OF FINANCIAL MANAGEMENT 9 Hours

Financial management – Scope – Objectives – Time value of money – Methods of appraising project profitability – Sources of finance – Working capital and management of working capital

ACCOUNTING SYSTEM, STATEMENT AND FINANCIAL ANALYSIS 9 Hours

Accounting system – Systems of book-keeping – Journal – Ledger – Trail balance – Financial statements – Ratio analysis – Types of ratios – Significance – Limitations

Total: 45 Hours

REFERENCE

1. Prasanna Chandra, " Fundamentals of Financial Management",Tata Mcgraw Hill Publishing Ltd., Third Edition,1999.
2. Weston & Brigham, " Essentials of Managerial Finance", Cengage Learning, 14th edition, 2007.
3. Pandey, I. M., "Financial Management", Vikas Publishing house Pvt Ltd., 2009.
4. James C. Van Horne, "Fundamentals of Financial Management", Prentice Hall, 11th Edition, 2000.
5. *J*ames C. Van Horne, "Financial Management & Policy",Prentice Hall, 12th Edition,2001.
6. M. Y. Khan & P. K. Jain, "Management Accounting & Financial Management", Tata Mcgraw Hill Education (P)Ltd., seventh Edition, 1985.
7. Management Accounting Principles & Practice -P. Saravanavel

U13GST006 PRODUCT DESIGN AND DEVELOPMENT

L	T	P	C
3	0	0	3

Course Objectives

- Acquire knowledge on the various stages of a product development process
- Develop skills for using the various tools and techniques for developing products
- Acquire knowledge on project management techniques

Course Outcomes

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

- Understand the process to plan and develop products
- Understand the process of collecting information and developing product specifications
- Understand the concept generation, selection and testing processes
- Understand the concepts of product architecture, industrial design and design for manufacture
- Understand the basics of prototyping, economic analysis and project planning and execution processes

Course Content

INTRODUCTION - DEVELOPMENT PROCESSES AND ORGANIZATIONS - PRODUCT PLANNING **9 Hours**

Characteristics of successful product development to Design and develop products, duration and cost of product development, the challenges of product development.

A generic development process, concept development: the front-end process, adapting the generic product development process, the AMF development process, product development organizations, the AMF organization.

The product planning process, identify opportunities. Evaluate and prioritize projects, allocate resources and plan timing, complete pre project planning, reflect all the results and the process.

IDENTIFYING CUSTOMER NEEDS - PRODUCT SPECIFICATIONS **9 Hours**

Gathering raw data from customers, interpreting raw data in terms of customer needs, organizing the needs into a hierarchy, establishing the relative importance of the needs and reflecting on the results and the process. Specifications, establish specifications, establishing target specifications setting the final specifications.

CONCEPT GENERATION - CONCEPT SELECTION - CONCEPT TESTING **9 Hours**

The activity of concept generation clarify the problem search externally, search internally, explore systematically, reflect on the results and the process.

Overview of methodology, concept screening, concept scoring, caveats.

Purpose of concept test, choosing a survey population and a survey format, communicate the concept, measuring customer response, interpreting the result, reflecting on the results and the process.

PRODUCT ARCHITECTURE - INDUSTRIAL DESIGN - DESIGN FOR MANUFACTURING **9 Hours**

Meaning of product architecture, implications of the architecture, establishing the architecture, variety and supply chain considerations, platform planning, related system level design issues.

Assessing the need for industrial design, the impact of industrial design, industrial design process, managing the industrial design process, is assessing the quality of industrial design.

Definition, estimation of manufacturing cost, reducing the cost of components, assembly, supporting production, impact of DFM on other factors.

PROTOTYPING - PRODUCT DEVELOPMENT ECONOMICS - MANAGING PROJECTS
9 Hours

Prototyping basics, principles of prototyping, technologies, planning for prototypes.

Elements of economic analysis, base case financial mode,. Sensitive analysis, project trade-offs, influence of qualitative factors on project success, qualitative analysis.

Understanding and representing task, baseline project planning, accelerating projects, project execution, postmortem project evaluation.

Total: 45 Hours

REFERENCE

1. Ulrich (Karl T)& Eppinger (Steven D) " Product Design and Development" McGrawHill Inc., Newyork, 1995
2. A K Chitale & R C Gupta, "Product Design and Manufacturing" , Prentice Hall Of India (P) Ltd.,1997
3. Tim Jones, "New Product Development – An Introduction to Multi functional Process", Butterworth –Heinemann,1997.
4. Boodhroyd Geoffrey, "Product Design for Manufacture and Assembly" Taylor & Francis Group, Second edition, 2002.