

**B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus**

**COURSE STRUCTURE
SECOND YEAR FIRST SEMESTER**

A. THEORY							
	CODE	THEORY	CONTACTS (PERIODS/WEEK)				
			L	T	P	TOTAL	
1.	APM 301	Costumes and Apparel industry	3	0		3	3
2.	APM 302	Fashion Design	3	0		3	3
3.	APM 303	Basics of Textile Manufacture -I	3	0		3	3
4.	APM304	Textile Wet Processing I	3	0		3	3
5.	APM305	Apparel production I	3	0		3	3
6.	TT306	Applied Mechanics	3	0		3	3
7.	TT307	Statistics	3	1		4	4
Total of Theory			21	1		22	22
B. PRACTICALS							
8.	APM 391	Wet processing Lab I			3	3	2
9.	APM392	Basic Apparel Production			3	3	2
10.	APM393	Fashion Sketching, Drawing and Designing			3	3	2
11.	APM394	Computer Application Lab			3	3	2
Total of Practical					12	12	8
Total of Semester			34			30	

SECOND YEAR SECOND SEMESTER

A. THEORY							
	CODE	THEORY	CONTACTS (PERIODS/WEEK)				CREDITS
			L	T	P	TOTAL	
1.	APM401	Apparel production II	3	0		3	3
2.	APM402	Fabric Structure and Textile Testing	3	0		3	3
3.	APM403	Basics of Textile Manufacture II	2	0		2	2
4.	APM404	Textile Wet Processing II	3	0		3	3
5.	APM405	Basics of Apparel Production Process	3	0		3	3
6.	APM406	Pattern Making	3	1		4	4
Total of Theory			17	1		18	18

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B. PRACTICALS							
7.	APM491	Apparel Production Lab			3	3	2
8.	APM492	Textile Testing and Fabric analysis Lab			3	3	2
9.	APM493	Textile Wet processing Lab II			3	3	2
10.	APM494	Pattern Making and Grading Lab			3	3	2
11.	HU 491	Language laboratory / Report Writing			3	3	2
Total of Practical					15	15	10
Total of Semester			33			28	

THIRD YEAR FIRST SEMISTER

THEORY							
	CODE	THEORY	CONTACTS (PERIODS/WEEK)				
			L	T	P	TOTAL	
1.	APM501	Apparel costing	3	0		3	3
2.	APM502	Garment production Machineries and Equipment	3	0		3	3
3.	APM503	Apparel production Control	3	0		3	3
4.	APM504	Fabric Garment and Finishing Care	3	0		3	3
5.	APM505	Quality Assurance in Apparel Industry	3	1		4	4
Total of Theory			15	1		16	16
B. PRACTICALS							
7.	APM591	Fashion Design Lab			3	3	2
8.	APM592	Garment construction and Lab			3	3	2
9.	APM593	Apparel Machinery and Equipment Lab			3	3	2
10.	APM594	Industrial Training			3	3	2
Total of Practical					12	12	8
Total of Semester			28			24	

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THIRD YEAR SECOND SEMISTER

A. THEORY							
	CODE	THEORY	CONTACTS (PERIODS/WEEK)				
			L	T	P	TOTAL	
1.	APM601	Product Engineering and Plant Lay Out	3	0		3	3
2.	APM602	CAD/CAM for Apparel Products	3	0		3	3
3.	APM603	Apparel Accessories And Surface Ornamentation	3	0		3	3
4.	APM604	Knitwear Technology	3	0		3	3
5.	APM605	Operation Research	3	0		3	3
6.	APM606	Industrial Management	3	0		3	3
7.	APM607	Fashion Business	3	0		3	3
Total of Theory			21	0		21	21
B. PRACTICALS							
8.	APM691	Apparel CAD lab			3	3	2
9.	APM692	Apparel designing And draping Lab			3	3	2
10.	TT693	Seminar			3	3	2
Total of Practical					9	9	6
Total of Semester			30			27	

FOURTH YEAR FIRST SEMISTER

A. THEORY							
	CODE	THEORY	CONTACTS (PERIODS/WEEK)				
			L	T	P	TOTAL	
1.	APM701	Information Technology in Apparel industry	3	0		3	3
2.	APM702	Industrial Eng.	3	0		3	3
3.	APM703	Clothing Science	3	0		3	3
4.	APM704	Apparel Marketing and Merchandising	3	0		3	3
5.	APM705	International Business & Documentation	3	0		3	3
6.	APM706	Design Concept Of Apparel Machinery and Equipment	3	0		3	3
Total of Theory			18	0		18	18
B. PRACTICALS							
7.	APM791	Industrial Training					2

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8.	APM792	Seminar on Industrial Training					3
9.	APM793	Minor Project			9	9	6
10.	APM794	Information Technology in Garment Lab			3	3	2
Total of Practical					12	12	13
Total of Semester			30				31

FOURTH YEAR SECOND SEMISTER

THEORY								
	CODE	THEORY	CONTACTS (PERIODS/WEEK)					
			L	T	P	TOTAL		
1.	1	HU801	Values and Ethics in Profession	3	0		3	3
2.	2	TT801	Energy Science	3	0		3	3
3.	3	APM802	Elective	3	0		3	3
Total of Theory							9	9
B. PRACTICALS								
4.	APM891	Assigned Project			12	12	8	
5.	APM881	Personality development			3	3	2	
6.	APM894	Comprehensive Viva-Voce					4	
Total of Practical						15	14	
Total of Semester			24				23	

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DETAILS OF CURRICULUM

ENGLISH LANGUAGE & COMMUNICATION

SEMESTER-III

COSTUMES AND APPAREL INDUSTRY (APM301)

L	T	P	C
3	0	0	3

Apparel industry –development of the industry through Industrial revolution ,World war periods post war fashion developments.

The Apparel industry in India- Domestic Industry; Size of industry, nature of industry.

Export industry :size & nature of this industry

Sourcing and production centers: fabric dyeing,printing,finishing,trimmings and accessories

Promotional Organisation: AEPC,GEA,AHEA,CMAI etc .Their role in the promotion of garments exports

Major domestic retailing/overseas retailing.

Auxiliary fashion Enterprises,Fashion Information service,Advertising& publicity Agencies

Costumes:Origin of costume-origin of clothing ,growth dress out of painting,cutting&other methods,need for clothing,factors influencing costume changes.

Costume of India :Traditional costume different states of India,Accecories& ornaments used in India.

Costume of Far Eastern Countries :Costume of Pakistan,Srilanka,China,Mianamar,Thialand.

Costume of Egypt,Greece,And Rome,African Costumes

French Costumes:French Costumes during renaissance 1400-1600

English costumes :English Costume during Middle Ages.

American costumes: American costumes from 18th to 20th centuries

Reference Subjects:

Text Books&Articles

- 1.Katherine Morris Cester,"Historic Costumes", Prentice Hall 2000.
- 2.FringeG.S."Fashion from concept toConsumer",Prentice Hall1998
- 3.Jamila Brij bhu Shan,"The constume & textiles India ",Prentice Hall 2000.
- 4.Fillow J and Bernard n. Thomas and Hudson,"Traditional Indian textiles ",1993
- 5.Stede v. Berg"Paris fashion:a cultural history"2nd edition 1998
- 6.Hart A north S V & A Museum"Historical Fashion in detail the 17th & 18th centuries" 1998

FASHION DESIGN (APM302)

L	T	P	C
3	0	0	3

Fashion : Terminology, Cycle influence,Elements of fashion history of fashion

Fashion designers American,European&others,Fashion centers oof world

Basic Design : Types of Design-Mod board-Formation of mood board

Elements of Design: Introduction to element of design- line & direction –shape&form – size colour- texture introducing element of design on apparels

Principles of design of costumes:Introduction to principles of design – balance-proportion-Emphasis-

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Rhythm-Harmony- Introducing principle design on apparels.

Colour aspects of costumes : colour theory-primary-secondary-tertiary colour- Intermediate colour-colour scheme- colour dimension-Warm& cool colour-colour harmony
Illusion:illusion created by elements, principles & colour on apparel.

Figure/ Design Analysis : stout figure,slim figure,slender,narrow shoulder,broad shoulders,round shoulders,large bust,flat bust,large hips,large abdomen,short waist,long waist,sway back,large neck,short neck,large face,small face,square or broad face,round face,narrow pointed face,retrouse nose,prominent nose,prominent forehead,sharp angular features and large features.
Chracteristics of a well dressed person- selection of fabrics,textiles,pattern&colour,Asthetic requirement for dress

Elements of apparels :women's dress –style,fashion&fad- suitability to the individual factors in personality – Men's dress- factors to consider,fabrics,coats,trousers,shirts,collars&pockets.
Accessory of design:neck ties,hats,over coats,hosiery & shoes,hair dressing

Planning wardrobes for different age groups:Helth nad comfort in dress,economy in dress.
Fashion shows & Window display –importance survey on modern dress, study of current fashion trends,fashion forecasting-colour,fabrics,current fashion silhouettes,texture,designs seasons

Text books :

- 1.Ander son B. and Anderson C''costume design'',Harcourt Brace 2nd Ed.,1999
- 2.Laver J., costume and Fashion'' Thames & Hudson 1995

BASICS OF TEXTILE MANUFACTURE –I (APM303)

L	T	P	C
3	0	0	3

Introduction of textile fibers: Classification of textile fibres-Physical and chemical properties of fibres and their uses-cotton, jute, wool,silk,viscose,nylon,polyester,acrylic,polypropylene,introduction of microfibrres-texturisation,defination,types,properties of textured yarn-its uses

Yarn manufactureing Process:ginning-objectives,types and process sequence,suitability of various gins to different staples of cotton

Objectives and process sequence –Blowroom,carding,Drawing,combing,simplex,ringframe

Objectives and process sequence-Rotor spinning,airjet spinning,friction spinning, comparison of yarn properties produced in the above processes.

Post spinning process: sequence of process-Doubling,cone winding,reeling-Ply yarn and single yarn characteristics

Yarn quality Requirements:yarn quality requirements for weaving and knitting. Imperfections and yarn faults-Package faults,causes & remedies.

Sewing thread manufacture: fibres used and essential quality particulars of sweing thread,process sequence and manufacturing details of sewing thread.

Text Books&Articles

- 1.Sreenivasamoorthy .H.V 'Introduction to textile fibres'ATA ,1987

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2. Oxotoby E, " spun yarn technology", Butterworths, London, 1988
3. Joseph M.L. "Essential of textiles" Hold Rienhart Winston pub Co, New York, 1984
4. Klien. W.G "The technology of short staple spinning" Textile institute Manchester, 1988

TEXTILE WET PROCESSING –I (APM304)

L	T	P	C
3	0	0	3

Preparatory process in wet processing : sequence of process used in textile wet processing (brief definition)-Singeing-type of singeing, Fabric and yarn singeing- desizing- type of desizing, Enzyme desizing method –scouring of cotton and wool - method of kier boiling, degumming- bleaching- bleaching of all fibres with hypochlorites, peroxide and chlorite. Continuous scouring and peroxide bleaching - mercerizing- method of mercerizing for yarn and fabric- comparison of woven and knitted cloth processing, machinery used for pretreatments.

Colour and chemistry of dyes, classification of dyes, brief principle of application on various fibres, measurement of fastness properties.

Dyeing methods of cellulosic fibre with direct, reactive, sulphur and vat dyes, dyeing of protein fibres with acid dyes, dyeing of synthetic fibres with acid, cationic and disperse dyes. Dyeing machines - hank dyeing, jigger dyeing, winch dyeing, denim dyeing and soft flow dyeing machines, pad-steam and pad-thermosol methods.

Text Books

1. Shenai V.A 'Technology of Textile processing' Vol III, V, VII, & VIII Shevak Publications 1981
2. Datya K.V., Vaidya AA 'Chemical processing of synthetic fibres and blends' John Wiley & Sons, New York, 1984
3. Peter R.H. 'textile chemistry' Vol I & Vol II textile institute, Manchester 1970
4. Roy Choudhury A./K. "Textile Preparation and Dyeing" Science Publishers USA and Oxford & IBH, India.
5. Roy Choudhury A./K. "Modern Concept of Colour and Appearance" Science Publishers USA and Oxford & IBH, India.
6. Jacob Solinger, 'Apparel manufacturing Analysis' textile Book publisher, New York, 1988

APPAREL PRODUCTION –I (APM305)

L	T	P	C
3	0	0	3

Anatomy: proportion and disproportion of humane figure. figure types and variations- normal figures- measurements and its importance- Standard body measurements for children, ladies and gents. Sequence of taking body measurements for various age groups and sex- recording of measurements, standardisation of body measurements.

Drafting: Consideration while cutting paper patterns- preparation of paper patterns, importance of paper patterns- types- Principles for pattern drafting- Advantages. Layout- open layout- Lengthwise layout- Crosswise layout- Double layout- combination layout- principles of layout- laying of different patterns on different types of fabric. Drafting basic pattern for bodice, sleeve, collar, yoke, and skirt.

Style reading: Preparation of dress form and draping fabric for various garments- Advantages of draping- style reading of basic bodice, different types of collars, sleeves, cuffs and pockets.

Flat pattern techniques: Fitting and pattern alteration : fitting- definition- principles of a good fit. Causes for poor fit, checking the fit of a garment, solving fitting problems in various garments- basic principles, fitting

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techniques

Pattern Alterations: Importance of altering patterns .principles of pattern alterations, common pattern ,alterations

In a blouse.alteration of pattern for irregular figures.

Pattern Grading:Master grades-basic back grading-basic front grading-basic sleeve grading-basic collar grading-basic facing grading

Grading of one piece collar and lapel-grading of set in sleeves-principles of grading full raglan sleeve-principles magyar sleeves.

Garments sizing and surveys: women's grading increments reference-area commentaries-selecting a grading system.

Multi track grading: track grading-simplified two dimensional system-trouser grading-Jacket grading-shirt sizing and grading-Men's waistcoat-grading and size charts

Textbooks:

Mary Mathews 'Practical clothing construction' Thomson & Co. Madras,1974

Cock V. 'Dress making simplified' Black well science,1987

APPLIED MECHANICS (TT306)

L	T	P	C
3	0	0	3

Introduction to engineering materials: Engineering materials, requirements ,classification, levels of structure,structure-property relationship in materials

Crystal geometry and structure of solids: introduction ,crystalline and non-crystalline states ,inorganic solids, metals and alloys, ionic solids, structure of silica and silicates ,idea of phase diagrams and transformations.

Elastic,anelastic and viscoelastic behaviour:elastic behavoiur-idea of atomic model, idea of modulus as a parameter of design,rubber like elasticity anelastic behaviour-relaxation process,viscoelastic behaviour-introduction to spring dashpot model.

Plastic Deformation and Creep in crystalline materials:plastic deformation-review of stress –strain curves,plastic deformation by slip,idea of shear strength of perfect and real crystals,idea of stress to remove a dislocation.

Fractures:ductile fracture,brittle fracture,idea of ductile –brittle transion .methods of protection against fracture,fatigue fracture.

Heat treatment:Annealing,normalizing, critical cooling rate, hardenability,factors of hardenability,quench test and determination of hardenability.

Mechanics of machines: Introduction:revision of general concepts of mechanics,revision of basic concepts for translation ,introduction to three dimensional dynamics of rigid bodies.

Mechanisms:a)cams:cam with straight flank –roller ended follower,cam with curved flanks –flat ended follower, circular cam-flat and roller ended follower,spring force,reaction torques and equivalent mechanisms.

b)crank effort diagrams:crank effort diagram, flucyuation of speed and energy.

c)Hook's joint :velocity nad acceleration ,double Hook's joint.

d)Belt drives and sfoes brakes:centrifugal forces and driving tensions modification of V grooved pulley,initial tension ,belt creep, external and internal shoe brake.

e)Toothed gearing:Spur gears, condition for transmission of constant velocity ratio,velocity of sliding,path of contact and contact ratio, interference,methods of avoiding interfrance ,rack and pinion,internal teeth,helical gears,forces on bearing,equivalent spur wheel, spiral gears,gear ratio and center distance,worm and worm wheel, epicylic gears'

f)Friction Clutches:plate clutgh and centrifugal clutch

g)Balancing: introduction ,basic ideas

h)Gyroscope:Introduction ,gyroscopic couples,effect of gyroscopic couples,general case.

Reference: subjects: 1)Mechanical sciences (ME 101)

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TEXT BOOKS

- 1) Theory of machines by Rattan,
- 2) Theory of Machines by Khurmi & Gupta
- 3) Material science and Engineering V. Ragavan
- 4) Engineering Mechanics by S.S Bhavikatti and K.G. Rajashekerappa.

STATISTICS (TT307)

L	T	P	C
3	1	0	4

Introduction: What is statistics, definition of Variances and random variables-discrete and continuous variables.

Patterns in data: frequency distribution, cumulative frequency, ogive, histogram and frequency polygon. Measure of central tendency and dispersion: Mean, median, mode, quartiles, range, mean deviation, standard deviation, coefficient of variation, calculation involving the use of frequency distribution.

Probability: Definition of probability, composed event, addition of two or more than two events, exhaustive event, mutually exclusive event, independent event, conditional probability. Baye's theorem, weak law of large numbers and central limit theorem (without proof)

Some standard probability distributions: Expected value of a random variable, Bernoulli's trial, distribution function, calculation of mean and variance of binomial distribution, poisson distribution its mean and variance, density function, normal distribution, normal approximation to binomial, standard normal distribution tables of normal distribution, curve fitting.

Sampling distribution: definition of population and sample, sampling distribution of mean and variance.

Inference concerning mean: Point estimation, interval estimation, Bayesian estimation, test of hypothesis, null hypothesis, hypothesis concerning one mean and two means.

Inference concerning variances: The estimation of variances, hypothesis concerning one and two variances.

Concept of analysis of variances: only introductory idea.

Simple nonparametric test.

Curve fitting: concept of two variables and their relation, regression line of regression, the correlation coefficient- interpretation and significance, method of least square, normal equation.

Reference subjects:

1. Textile testing & Instruments I (TT305).
2. Textile testing & Instruments II (TT405)

Text Books:

1. Statistics by N.G. Das
2. Probability & Statistics for Engineers by Miller & Freundt.
3. Practical statistics in textile industry part I and II G.A. V Leaf.

WET PROCESSING LAB-I (APM391)

Practical

(All)

The following list is no way exhaustive. Additional laboratory work or experiments can be planned to consolidate the theoretical work and to emphasize the activities for doing rather than the knowing.

1. Desizing and scouring of cotton yarn/cloth
2. Bleaching of cotton yarn/cloth using hydrogen peroxide
3. Degumming of silk
4. Scouring and bleaching of jute
5. Colour measurement by spectrophotometer.

BASIC APPAREL PRODUCTION LAB (APM392)

Practical

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(All)

- 1.Prepare basic patterns and do variations
- 2.Grade the basic patterns
- 3.Construct,finish and press the same using the drafted patterns
 - 1.Bodice
 - 2.Cuffs
 - 3.Sleeves.
 - 4.Yokes
 - 5.Pockets
 - 6.Collars
 - 7.Plackets
 - 8.Skirts

FASHION SKETCHING, DRAWING AND DESIGNING LAB (APM393)

Practical

(All)

Study of types and techniques of illustration

Study of basic anatomy.

Constant proportions – Children-Men and Women in Various poses

Drawing face and hairstyles.

Drawing arms and legs with accessories.

Creating various poses.

Design details –Silhouette and its types.

Drawing different types of necklines, collars, sleeves and cuffs.

Drawing blouses, skirts, pants and coats'

Costume drawing-Drawing the details on the anatomy -Sketching the fall of the fabric-Accessories

drawing. Sketching different types of garments and costumes with black pen,water color,sketching national costumes-traditional costumes of various states of India

COMPUTER APPLICATION LAB (APM394)

Practical

(All)

1. Simple word processing-learning to use differential size & types of fonts-line spacing-tables-inserting pictures-editing-cut&paste.
2. Spread sheet processing-formulas for row-column-charts-inserting pictures-different forms-worksheets-row header& column headers
3. Photoshop practices
4. Corel Draw-Garment Designing, styling, Alteration, coloring, Erasing, Painting etc
5. Auto CAD worksheets: Drawing aids and utility commands, entities,text,layers,inquiry,display,editing,hatching,isometric,dimension,block and assembly,scripts,DXF & IGES files.

SEMESTER-IV

APPAREL PRODUCTION –II (APM401)

L	T	P	C
3	0	0	3

Garment construction : Introduction to sewing machines-its parts-sewing machine control- common problems and its remedies.

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Stitches: Classification –constructive stitches-temporary and permanent stitches standards for good stitches.
Seams: definition, types of seams and seam finishes. their suitability and application in various garments.hem finish

Fullness: definition, methods of introducing fullness in garments-gathers, pleats, flares, flounces, smocking,tucks&darts,methods of controlling fullness.

Neck Finishes: definition of finishes, facing, binding, fitted facing, bias-true bias-joining bias strip

Collars: Definition, factors to be considered in designing collars, classification of collars-Ripped collar, Chinese collar, full roll collar, partial roll collar, square collar, Peter pan collar, shirt collar, scalloped collar, sailor collar, puritan collar, tie collar, turtle collar and shawl collar.

Pockets: Selection of pockets design, constructing pockets, patch-pocket, bound pocket, welt pocket, pocket in seam and front hip pocket.

Yoke:creating variety in yoke designs, preparing yokes,type yokes,attaching yokes.

Plackets:types of plackets-shirt placket,lapped seam,zipper placket, tailors placket,one piece placket,two piece placket,fly opening and zipper method.

Skirts: its type,adding fullness and controlling fullness,finishing skirts

Sleeves:Making and constructing sleeves-set in sleeves,sleeves with bodice style and sleeveless styles.

References:

- 1.Mary Mathews , 'Practical clothing construction' Thomson &co.,madras,1974.
- 2.Cock V., 'Dress Making Simplified' Black science, 1987
- 3.Patric taylor J., Marti shoben M, 'grading for the fashion Industry' Stanley Thomas(publishers)Ltd.1990
- 4.Cartis Irving E., 'Fundamentals principles of pattern making for misses and women's garments'New york,FIT,1987
- 5.Handrod Jack ., 'Profesional pattern grading for women's,men's and children's apparel',redendo bench plycon press,1980
- 6.Erwin M.D. and Kinchen, ' Clothing for moderns' McMillan company New york 1970
- 7.Dangaji and desh panda ., 'Basic process and clothing construction orient' longnians,1970
- 8.Lang R.M., and Webster J., 'stitches and seams',The textile institute 1998

FABRIC STRUCTURE AND TEXTILE TESTING (APM402)

L	T	P	C
3	0	0	3

Woven structures : Definition of design,-draft-PegPlan- construction of Plain weave- its derivatives-Twill weave,-drill-Gabardine-Pointed twill-satin and sateen weaves-Honey comb-Huckaback, Construction particulars for cambric,voile,poplin,denim and chambray- Uses of these structured fabrics.

Knitted Structures: Notation for representing the structures-stitches-knit,tuck,float-Heir effect on structure stitch density-single Jersey:Derivatives and ornamentations-Properties.Rib Structures:properties,Derivatives-half cardigan,full cardigan-Purl Structure-properties-Derivatives-Eight lock.Double knit structures:Single pique-double pique-Milano rib,Swiss Pique,French pique-Pontedi roma-Ottaman rib-barrelet –Blister fabrics-Ripple fabrics-low stress mechanical properties by KES and FAST

Testing of yarn and fabrics: yarn –yarn numbering systems-method of count determination –Physical balance-Beesely balance-Single yarn strength tester-Lea tester-CSP-Corrected CSP-yarn crimp-shirley crimp tester-yarn appearance tester-ASTM grades, Evenness ,Hairiness,Uster Evenness Tester,Uster hairiness tester

Fabrics :Strength testing-tensile strength-tearing strength-Bursting strength-Abrasion testing-pill testing-thickness-shirley Thickness tester-drape-drapemeter-Testing of shade variation –Testing colour fastness-washing fastness-Light-rubbing-Importance of these on Garments.

Computerized fabric inspection system-Tailorability of woven and knitted fabrics

Knitted fabric testing –loop length-course legth-course length,GSM measurement of shrinkage.

Text Books :

- 1.Booth J.E Principle of textile testing,Butter worths,London,1983
- 2.Grosicki Z.J. Watsons Advanced Textile Design and colour'' Newness Butterworths,London,1975

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- 3.Spencer 'Knitting technology', Pergamon Bros,Oxford,1982
- 4.Ajgaonkar D.B.'Principle of knitting'Universal publishing corpn,1998

BASICS OF TEXTILE MANUFACTURE –II (APM403)

L	T	P	C
2	0	0	2

Introduction to weaving process :woven fabric formation:weaving preparatory-objectives,process sequence.Looms-brief study of primary motions and secondary motions. Passage of material in loom- Fabric faults-types-causes & remedies
Basic introduction and objective of dobby,jacquard,shuttleless looms airjet looms,waterjet looms,rapier looms.
Introduction to knitting process: knitting,definition,classification,comparison of basic properties of woven and knitted fabrics.
Weft knitting-types:circular,flat-important features,cycle of operation in plainjersy,rib and interlock
Introduction to jacquard machine
Warp knitting machine- important features of tricot,raschel,simplex,mélange,raschel crochet machine
Introduction to nonwovens : sequence of process in manufacturing nonwovens-types of bonding- mechanical,chemical and thermal –uses

Textbooks

- 1.Ormerod A and Sondhelm W.S 'Weaving Technology and operations 'the textile institute 1995
- 2.Ajgaonkar .D.B., 'Principles of knitting' Universal Publishing corporation,1998
- 3.Corbmann.B.P Textiles : fibre to fabric' Mcgraw Hill Inc. Singapore 1986
- 4.Spencer D.J. 'knitting technology'Pergamon Press,Oxford 1982

TEXTILE WET PROCESSING –II (APM404)

L	T	P	C
3	0	0	3

Printing of textiles: Difference between dyeing and printing- methods and styles of printing- printing of cellulosic fibres with pigment and reactive dyes, Silk and nylon with acid dyes, polyester with disperse dyes.
Methods of printing -screen printing-roller printing-rotary screen printing- -flock printing- -transfer printing- batik, tie and dye – steaming and curing.
Objective, classification of different finishing processes, principle, methods, advantages and disadvantages of different finishing processes including cross linking agents used for different substrates to impart crease recovery/easy care finish, anti shrink finishing, flame retarding/proofig, water repelling, rot and mildew proofing of wool, application of softeners, enzymatic softening, organdie finish, moth proofing of wool, antistatic finish.
Effluent treatment plant (ETP) Character of effluents from different textiles mills, chemicals and dyes creating pollution, causes of pollution, criteria in ETP, pollution treatment methods.

Text books

1. Shenai V.A 'Technology of textile processing' Vol III,V,VII,&VIII Shevak.Publications 1981
2. Datya K.V.,Vaidya AA 'Chemical processing of synthetic fibres and blends''John Wiley&Sons,Newyork,1984
3. Peter R.H.'textile chemistry' Vol I & Vol II extile institute,Manchester 1970
4. Miles L.W.C 'Textile Printing' dyers Pub co. UK 1981

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5. Jacob Solinger , ' Apparel manufacturing Analysis' textile Book publisher, New york,1988
6. W D Schindler and P J Hauser, 2004. *Chemical Finishing of Textiles* (Cambridge, England: Woodhead)
7. M Lewin and S B Sello, Ed. *Functional Finishes*, Handbook of Fibre Science and Technology: Volume II, Part A and B (New York, USA: Marcel Dekker)
8. J.T. Marsh, *An introduction to textile finishing*, B.I. Publications, India, 1979.
9. A.J. Hall, *Textile finishing*, Heywoods, London, 1966.

BASICS OF APPAREL PRODUCTION PROCESS (APM405)

L	T	P	C
3	0	3	3

Introduction to Apparel Industry:Apparel industry in India, Domestic industry, size of the industry, nature of the industry, its developments in

recent years. Export industry: Size and nature of the industry.

Fashion:Fashion terminology, Fashion cycle, Fashion industry, factors affecting fashion, Fashion adaptation theories.

Major fashion centres of the world: Brief introduction to world fashion centres- American, European, Japanese

and Indian; Fashion houses and designers.

Retailing:Various types of retailers, Franchise retailing, private labels and others, department stores, speciality stores, chain

retailers, mail order houses, shopping malls. Designer labels Vs Brands, Analysis of designers labels.

Licensing

and franchising.

Design:Elements and principles of design: Line, colour and proportion emphasis. Design process:

Designers' functions -

Inspiration files, sketches, how to interpret designs, story Board / Fabric story; The design studio, sampling.

Fashion information services:Trend forecasting and auxiliary services. Forecasting trends: Purpose of forecasting trends, how to use

forecasting services. Fashion promotion and communications: Trade fairs, Fashion shows.

References:

1. Brockman, H.L., " The theory of Fashion ", John Wiley & Sons, (1965).
2. Kawashima, Masazki, " Fundamentals of Men's Fashion Design ", Fairchild's publications (1976).
3. Carr, H.C., " The clothing Factory ", The Clothing Institute, London (1972)
4. Jarnow, J.A., and Judelle B., " Inside the Fashion Business ", JWS (1974) 2nd edition.
5. Barton, Roger " Advertising Handbook ", Prentice Hall Inc (1956).
6. Swinney, John B, " Merchandising of Fashion ", Ronald press (1942).
7. Jacob Solinger., " Apparel Manufacturing Handbook ", VanNostrand Reinhold Company (1980).

PATTERN MAKING (APM406)

L	T	P	C
3	1	0	4

Measurement taking - size chart and meaning of sizes. Definition of various garment parts and positions.

Methods: Bespoke method and industrial method (using blocks) - basic block construction - block preparation

and correction.

Pattern making by manipulation of dart - elementary and advanced dart manipulation. Manipulation as seen through existing suppression points (bust points), away from suppression points, as gathers or tucks, as multiple

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darts. Methods: Slash and spread method, pivot method, difference between permanent pattern (draft) working

patterns and production patterns. Importance of drill hole marks in the darts; seam allowances and its importance.

Importance of notches: balance marks and grain lines.

Basic principles and methodologies used to draft standard size block patterns for men, women and kids wear -viz., shirts, pants, skirts, blouses, jackets, dresses etc.,

Construction of sleeve block - crown height and its relationship with the fit of garment. Introduction to Silhouettes of the sleeves. Sleeve variation - cap, regular shirtsleeve, bishop, Leg - O mutton, puff sleeve.

Cuffs and sleeve opening, sleeve plackets.

Collars: Set-in collars and collar variations- band collars, Peterpan, sailor, gent's shirt collar - one piece and two-piece collar, convertible collar.

Principles and technology of grading. Standard size block patterns - grading techniques for half-size and full-size patterns - Computer grading

References:

1. Struin Pamela, "Pattern drafting for Dress Making" Augustan Delhi 1995
2. Martin M. Shoben and Janet P. ward, "Pattern cutting and Make for outerwear" Butter worth heinmann Ltd, Oxford 1987
3. Alorich Winifred "Metric pattern Cutting", Blackwell science, London, 1995

APPAREL PRODUCTION LAB (APM491)
Practical (All)

Using the drafted paper patterns construct, finish and press the following

1. Panties, jabla, romper, Aline frock
2. Brief and vest
1. Sari petticoat sari blouse
2. Salwar-Kameez
3. Middy top and skirt,
4. Lachas.

TEXTILE TESTING AND FABRIC ANALYSIS LAB (APM492)
Practical (All)

Yarn testing: Count determination of sliver, roving and yarn

Single yarn/ply yarn twist testing

Single yarn/lea strength

Yarn evenness

Fabric testing: Fabric tensile/tearing strength; bursting strength, fabric abrasion resistance, drape, stiffness, crease recovery;

Fabric analysis: woven fabric analysis-weave -draft-peg plan

Warp particulars-materials warp-ends per inch-count, direction & amount of twist; crimp%, cover factor; weft particulars-material weft, picks per inch, count, direction & amount of twist, crimp%, cover factor; total cover factor
knitted fabric analysis- structure, wales/inch-coarse/inch-loop length, coarse/inch-loop length, coarse length, stitch density-tightness factor;

TEXTILE WET PROCESSING LAB II (APM493)
Practical
(All)

1. Dyeing of cotton yarn/fabric using direct dye
2. Dyeing of cotton yarn/fabric using cold brand and hot brand reactive dyes
3. Dyeing of cotton yarn/fabric using Vat and sulphur dyes
4. Dyeing of jute yarn using Direct and Reactive dyes

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5. Dyeing of silk fabric using acid and basic dyes
6. Dyeing of wool using Metal complex and Reactive dyes
7. Dyeing of Cotton and silk fabrics using natural dyes
8. Dyeing of blended fabrics-PET/CO,VIS/PET
9. Printing of cotton fabric by block method
10. Printing of cotton fabric by Table Screen Method
11. Finishing of cotton fabric by a few temporary and durable methods

PATTERN MAKING AND GRADING LAB (APM494)

Practical (All)

Draft The Paper Pattern And Do Grading For The Following:

- 1.Panties,jabla,romper,A-line frock
- 2.Brief and vest
- 3.Sari petticoat sari blouse
- 4.Salwar-Kameez
- 5.Middy top and skirt,
- 6.Lachas.
- 7.Shirt,T-shirt
- 8.Double breasted coat, jacket
- 9.Sherwani
- 10.Pant, Bermudas

LANGUAGE LABORATORY/REPORT WRITING (HU491)

L	T	P	C
0	0	3	2

- 1.Introduction:Introductory lecture is to be given to students so that they get a clear idea of syllabus and understand the need for having such a practice lab in the first place (3 hours)
- 2.Conversion practice:this is to be done on given situation topics.The students are also made to listen to pre-recorded cassettes produced by British council and also by the universities of Oxford and Cambridge (6 hours)
- 3.Group Discussions:The students are made to understand the difference between the language of conversion and group discussion .Strategies of such discussion are to teach to them.it is also helpful to use videocassettes produced by the UGC on topics like group-discussion .afterwards the class is divided into groups and the students have to discuss on given topics on current socio-economic-political-educational importance (12 hours)
- 4.Interview sessions:students are taught the do's and don'ts of facing a successful interview.They then have to face rigorous practices of mock-interviews. there simulations of real life interview sessions where students have to face an interview panel (12 hours)
- 5.Presentations:The secrets of an effective presentation are taught to the students.Then each and every student has to make lab presentations with the help of the overhead projector/using power point presentation and other audio-visual aids in the laboratory.They also have to face the question answer sessions at the end of their presentation . (12 hours)
- 6.Testing sessions: Classes are also allotted to prepare the students for competitive examinations like TOEFL by making the students listen to specially produced CD cassettes of such examinations (3 hours)

The overall aim of this course is to inculcate a sense of confidence in the students and help them to become good communicators in their social as well as professional lives.

Text books and Articles:

- 1.Sharma-Business correspondence &report writing .TMH
2. prasad-group discussion & interview(With audio cassettes),TMH
- 3.Sashi Kumar- spoken English (with cassette),TMH

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SEMESTER-V

APPAREL COSTING (APM501)

L	T	P	C
3	0	0	3

Introduction to Cost Accounting : Responsibility accounting, uses of cost accounting, elements of cost, Direct material, Direct labour, factory overhead; cost of goods manufactured statements, cost behaviour patterns in the apparel industry-fixed variable, semi variable, job order for process costing; Accounting for factory overhead: Capacity level concepts, production and service departments direct and indirect costs over and under applied overhead, cost volume profit analysis; Breakeven analysis: Contribution margin, Variable, cost ratio, marginal income.; sales mix by garment style, effect of volume change, price/cost analysis

Apparel Marketing cost Analysis: Marketing cost accounting, marketing cost standards, variance analysis for marketing cost, effective variance, price variance;

Determining Pricing of apparel products: Price elasticity of demand and supply, sample costing-marginal revenue and marginal cost, cost plus pricing methods; Full cost pricing, conversion cost pricing differential cost pricing, variable cost pricing, direct cost pricing derivation of cost of apparel products-woven/knits; The budgeting process: Budgeting principles for the apparel industry, fixed vs. variable budget, master budget, laminations of budgets any justification effort

References

1. Richard D. Irwin Inc., "Principles of cost Accounting: Managerial Applications" Revised by Gayle Rayburn 1983
2. Sultan Chand & sons "Management Accounting" New Delhi, 2nd edition 1998

GARMENT PRODUCTION MACHINERIES AND EQUIPMENT (APM502)

L	T	P	C
3	0	3	3

Introduction to spreading machines and cutting machines - types and functions History of sewing machines and development. Sewing machinery - classification according to bed types, stitch types (hook or looper), material wise (extra light to heavy weight).

Major parts of sewing machinery and functions. Adjustment of major parts of Single needle lock stitch machine: Non-UBT: stand height, pedal, presser foot, height of needle bar, needle to hook relationship, height of feed dog, normal and reverse feed stitch length, feed timing, presser foot pressure, needle and bobbin thread tension, bobbin winding assembly, belt tension. Sewing machine safety regulations.

Sewing needle and sewing thread, thread consumption, thread routing. Adjustment on SNLS UBT: Needle stop position, wiper, thread timing sequence, timing of thread trimmer cam, positioning the moving knife, installation, sharpening, replacing moving knives, adjusting the floating amount of the auxiliary tension disk.

Parts, functions and adjustments of Over lock: Needle height, feed dog height, differential feed ratio, tilt of the feed dog, position of the upper and lower knives, sharpening of knife and loopers, trouble shooting in over lock.

Work-aids and attachments, functions of pullers, guides and folders compensating presser foot- left, right, double; feller, hemmer etc. Collar turning machines, folding machinery, fusing and pressing machinery. Computer controlled cutting, sewing, folding machinery.

References :

1. Jacob Solinger., " Apparel Manufacturing Handbook ", VanNostrand Reinhold Company (1980).

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2. Peyton B .Hudson., " Guide to Apparel Manufacturing ", MEDIApparel Inc (1989) ISBN: 0 - 945116-08-X.
3. Carr.H, Latham. B., " The Technology of Clothing Manufacture ", Blackwell Scientific Publications (1988).

APPAREL PRODUCTION CONTROL (APM503)

L	T	P	C
3	0	3	3

Introduction :control parameters, apparel production parameters, planning and lead-time. Product development: Steps from prototype to production model, Importance of pre-production activities; Introduction to timetable concepts.Product data management: Understanding and interpretation of specification sheet.

Operation sequence development: Garment breakdown with machine and attachment details, development of production grid for garment construction, development of production flowchart.

Bundle tickets:Guidelines for bundle ticket design, functions of bundle tickets, bundle ticket control. Different manufacturing systems: Make through and Assembly line manufacturing - advantages and disadvantages.

Lay lot planning: Numerical exercises on lay lot planning to optimize cutting cost, bundling, ticketing and cutting room control formats.

Production Planning And Control :Capacity calculation for cutting, sewing and finishing. Determination of machine requirements for new factory.

Line balancing: Determination and allocation of manpower and, machine for balanced production in existing plant for a given target.

Quality In Product Development :Quality assurance during product development - methods to avoid problems during pattern making, garment construction and other areas. Inspection procedures. Work-study in garment industry - methods to control time and cost.

References :

1. A.J. Chuter., " Introduction to Clothing Production Management ", Blackwell Scientific Publications
2. David J. Tyler., " Materials Management in Clothing Production ", Blackwell Scientific Publications Professional Books.

FABRIC GARMENT AND FINISHING CARE (APM504)

L	T	P	C
3	0	3	3

Garment dyeing: Fabric and sewing thread selection, accessories selection, dye selection, garment-dyeing machinery.

Problems in conventional processing, awareness of banned dyes and chemicals- German ban, Eco-labels, natural dyes - history and backgrounds and applications. Eco friendly processing- desizing scouring, bleaching and dyeing. Alternative dyes and chemicals- structure- identification methods including chromatographic techniques

Garment finishing : Chemicals and enzymes, crinkle effect, softening, acid wash, stone wash, enzyme wash-denim finishing, chemical and sand blasting.

Washing: Stone washing, acid washing, enzyme washing, bio polishing, emerisation, bleaching, laser fading and ozone fading.

Stain removal, selection of spotting chemicals, factors for spotting,dry cleanings,care labels, laundering equipment and procedures.

Pressing: reasons for pressing, pressing and fabric characteristics, pressing equipments, conditions and types of pressing Packaging and folding: criteria for packaging, packaging and folding, specifications and standards for packaging, materials and equipments used for packaging, considerations for packaging and

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folding

References:

1. Harrison.P (Editor), " Garment Dyeing: Ready to wear fashion from the dye house", The Textile Institute, U.K (1988) ISBN: 1870812131.
2. Noemia D, souza ., " Fabric Care" , New Age International (P) Ltd Publisher, Chennai ,1998, ISBN: 81-224-1143-6.
3. Hall , A.J., " Textile Finishing ", Elsevier Publishing Co. Ltd., 1986.
4. Marsh, J.T., " An Introduction to Textile Finishing ", Chapman and Hall Ltd., London, 1979.
5. Shenai, V.A., " Technology of Textile Finishing " , Sevak Publications, Bombay, 1995.
6. Whittall N.S., "laundrying and dry cleaning" v01 8 textile progress 1996
7. Goldman R.f. and lyle D.S "Performance of testiles" john wiley and sons, new york
8. Garment wet processing technical manual AATCC/SDC 1994
9. Roy Choudhury A./K. "Textile Preparation and Dyeing" Science Publishers USA and Oxford & IBH, India
10. Finishers and environment –Solutions, Textile institute, Manchester 1993
11. Are Textiles finishing polluting the environment ? Textile institute Manchester 1990
12. Reife A and Freeman H.S, Environmental chemistry of dyes and pigments Wiley 1996.

QUALITY ASSURANCE IN APPAREL INDUSTRY (APM505)

L	T	P	C
3	1	0	4

Design satisfaction tests.

Fabric specification - cloth defects - four point system - shrinkage potential.

Garment specification - manufacturing specification - name of operation and associated details in respect of sewing, dyeing and washing of garments. garments testing-seam strength ,seam slippage ,garment checking procedure,interlining-peel bond strength Style features - trims specification - stitch specification - size scale – garment dimensions and tolerances.

Quality of trims and accessories. Defects in garments and their remedies - A, B and C zones in a garment with respect to defects.

Quality management concepts - quality control and inspections - S.Q.C. - acceptance sampling - T.Q.M. - I.S.O. Laboratory testing for quality and performance.

References:

1. Mehta V., " Managing quality in the apparel industry ", New Age International, Chennai, 1998.
2. Sigmon, D.M., Grady P.L., and Winchester S.C., " Computer Integrated Manufacturing and Total Quality Management ", Textile Progress, The Textile Institute, Manchester, 1998.
3. Laing, R.M. and Webster J., " Stitches and Seams ", The Textile Institute, Manchester, 1998.
4. Glock R.E. and Kunz G.I., " Apparel Manufacturing: Sewn Product Analysis ", Prentice Hall, 1995.
5. Mehta P.V. " An Introduction to Quality Control for the Apparel Industry ", Marcel Dekker, 1992.
6. Cooklin G., " Garment Technology for Fashion Designers ", Blackwell Science

FASHION DESIGN LAB (APM591)
Practical
(All)

1. working with 3-D shapes
2. Introduction to drawing
3. drawing figures to scale
4. drawing ladies blouse and skirts and giving suitable colours
5. Drawing men's shirt and part and giving suitable colours
6. Drawing children's wear of individual choice and justify the color combination

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7. Drawing ladies and men's summer wear.
8. Drawing ladies and men's winter wear
9. Drawing ladies and men's casual wear

GARMENT CONSTRUCTION AND TESTING LAB (APM592)

Practical
(All)

List of experiments:

Using the drafted paper patterns construct, finish and press the following:

1. panties, jabla, romper, A-line frock
2. Brief and vest
3. Sari petticoat sari blouse
4. Salwar-Kameez
5. Middy top and skirt,
6. Lachas.
7. Shirt, T-shirt
8. Double breasted coat, jacket
9. Sherwani
10. Pant, Bermudas
11. Garment testing: seam strength, seam slippage, garment-checking procedure
12. Interlinings-Peel bond strength

APPAREL MACHINERY AND EQUIPMENT LAB (APM593)

Practical
(All)

1. Study Of The Hook Shuttle Assembly In Lock Stitch machine
2. Study of needle bar section in lock stitch machine.
3. Study Of The Mechanisms Of Over Lock And Give The Threading Procedures For Three Thread Machines
4. Study Of The Mechanisms Of Over Lock And Give The Threading Procedures For Three Thread Machines
5. Study Of The Hook Shuttle Assembly In Flat lock Machine
6. Study of the needle bar sections in flat lock machines
7. Study Of The Cutting And Sharpening Mechanisms In Straight Knife Cutting Machines
8. Study Of The Stitch Mechanisms, Gears And Button Fixing Machine And Set The Same Various Stitch Levels And Length In A Button Fixing Machine

INDUSTRIAL TRAINING (APM594)

PRACTICAL/FIELD WORK

L	T	P	C
0	0		2

1. Orientation of the garment factory, name and address, area and site details of the factory, nature of the construction of the factory, product range of the factory, rules and regulations of the factory
2. Manufacturing process followed by the factory, significance of the plant layout with respect to the manufacturing process, technical details of the manufacturing department,
3. Organizational setup, categorize the number of workers, employed department-wise, number of supervisory staff and general staff, yearly turnover.

SEMESTER-VI

PRODUCT ENGINEERING AND PLANT LAY OUT (APM601)

L	T	P	C

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3	0	0	3
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Product analysis: Relationship between quality and construction of sewn product geometric principles of draping, drafting and industrial patterns product specifications.

Production control and Engineering :Industrial engineering concepts - Development and application of standard data for pre-costing and factory scheduling - Basic production systems - production control charts. Manufacturing Information system: Systems and procedures.

Production Management analysis: Analysis of techniques for material utilization and cutting of raw materials for all types of sewn products principles and methods of costing, evaluation of equipment for examining, spreading, cutting, marking and ticketing - solution of production problems in spreading, cutting and cost control.

Plant Layout Definition - Types of production layout, criteria for evaluation of a plant layout, determining minimum space requirement, calculation grid, plant size location, Basic production line layout, Government regulations for plant layout.

Time and motion study: 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.

References :

1. Jacob Solinger., " Apparel Manufacturing Handbook ", VanNostrand 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., (1971) 2nd edition.
4. Apple. J. M., " Plant Layout and Materials Handling ", The Ronald Press Co., New York (1950).
5. Immer , John. R., " Layout Planning Techniques ", McGraw Hill, New York, (1950).
6. Barnes, Ralph M., " Motion and Time Study ", John Wiley and Sons., New York., (1958) 4 th edition.

CAD/CAM FOR APPAREL PRODUCTS (APM602)

L	T	P	C
3	0	0	3

Introduction to computer:Introduction to computer - concepts of CAD / CAM. CAM in Garment Manufacturing. Complete pattern design system in preparation for grading, marker making and pattern manipulation.

Computerized production pattern making :Computerized production pattern making - Hardware, software and system programming to produce a sample production pattern. Computer aided production planning in Garment Manufacturing :Computer aided manipulation of pattern pieces to create individual styles. Operation of garment CAD software. Computer used for purchase, inventory control and sales, computerization in quality control and production control.

Introduction to finite scheduling concept and fast react software. Creating product and order planning, updating.

Eliminate late deliveries - General set up, allowances and matrices - Analyzing loan balancing in different departments - control mechanisms - critical path and time tables.

Cam Computer controlled machinery for garment manufacturing - automated layout planning by various techniques -

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Algorithm for computer production garment parts - intelligent systems - 3D scanning technology . Use of microcomputers for production control in garment industry. Imaging techniques for various designs. Development of robotics for CAM.
Management Information System in garments Industry:EDI in garment technology Concept of Enterprise Resource Planning (ERP) and computerization in exports / documentation.

References:

1. Stephen Gray " CAD / CAM in clothing and Textiles ", Gower Publishing Limited, 1998, ISBN 0-566-07673X.
2. Compilation of papers presented at the Annual world conference Sep 26 -29, 1984 Hongkong, " Computers in the world of textiles ", The textile Institute ISBN: 0-0900739-69X.
3. W.Aldrich, " CAD in clothing and Textiles ", Blackwell Science 2nd edition, 1992, ISBN: 0-63 -3893 - 4
4. Jacob Solinger, " Apparel Manufacturing Handbooks ", Van no strand and Reinhold Company, 1980,ISBN:0-442-21904-0.

APPAREL ACCESSORIES AND SURFACE ORNAMENTION (APM603)

L	T	P	C
3	0	0	3

Trimming and decorations;Definition need,types
Fasteners:types,suitability to garments-methods of stitching.
Surface decorations : Bias tubing- method of making-application on suitable garments,fringes,tassels,pompon,sequence,beads,mirror work
Applique-varities-method of application
Inter lining: types and methods attachments
Embroidery:Basic principles of hand embroidery,machine embroidery-running,corning,satin,long and short ,granite,eyelet,cutwork,monogram shoes, hosiery, hand bags and hats: definition,types&material used,nature of children, men's and women's hosiery.
Jwellery:types – fine& costume jewellery.
Other Accessories: gloves- millinery- belts- handkerchief-sunglass-umbrella. Body wears.
Refernces:

- 1.Diamond J and E., 'Fashion Apparel and Accessories',Delmar,1997.
- 2.Barbara Snook,'Creative art of embroidery'numbly publishing group ltd.London,2nd edition 1992
- 3.jennette A. Jarnow,' Inside the fashion business',Macmillan publishing company,new york,1990.
- 4.Peacock J.'Fashion source books', Thames and Hudson 1997-98

KNITWEAR TECHNOLOGY (APM604)

L	T	P	C
3	0	0	3

Introduction :comparison between knitted and woven fabrics. warp knitting and weft knitting. knitting needles.
Fundamentals of formation of knit, tuck and float stitches. basic knitted structures and their production i.e.,plain, rib, interlock and purl. quality of yarn required for knitting. yarn preparation for knitting.
Circular knitting:circular knitting production of various weft knitted structures needle control in circular knitting machines. factors affecting the formation of loop.effect of loop length and shape on fabric

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properties. faults in knitted fabrics, causes and remedies. production calculation.
 Flat knitting:basic principles; elements of flat knitting machines.different types of flat knitting machines- manual , mechanical and computer controlled knitting machines.production of various fabric designs with flat knitting machines.
 Warp knitting :warp knitting fundamentals. machine classification. preparation of yarn for warp knitting .
 Types of yarns used for winter garments :quality specification,quality requirements of fabrics for winter garments.
 Type of circular sweater strip machines,production techniques for sweaters.
 Fully fashioned sweaters description ,knitting of slipovers-cardigans,control defects in full fashioned knitting-production of full fashioned sleeves on v-bed flat machines.
 Cut and sew sweaters : cutting techniques,cutting machines-operating difficultiesand Remedies,sewing of sweater –strips- types of stiches and seams used in sweaters, common sweing defects and its remedies- pressing of sweaters-open buck,steam press,body form stem press

Text Book :

1. D.B Ajgaonkar ., " Knitting Technology", Universal Publication Corporation, Mumbai, 1998.
 ISBN:81-85027-34-X

2.Charles Richman ,’Guide to manufacturing of sweater,knit shirts and swim wear’ national knitted outwear Association ,Newyork,1978

References :

1. Chandrasekhar Iyer, Bernd Mammal and Wolfgang Schach., "Circular Kintting ", Meisenbach GmbH, Bamberg, 1995,ISBN:3-87525-066-4.
2. D.J.Spencer., " Knitting technology", Textile Institute, Manchester, 1989, ISBN:1855733137.
3. Samuel Raz., " Flat Knitting ; The new generation ", MeisenbachGmbH, Bamberg, ISBN:3-87525-054-0.
4. Samuel Raz., " Warp Knitting Production ", Melliand TextilberichteGmbH, Rohrbacher, 1987. ISBN:3-87529-022-4
5. A study on quality of knit wears that are being made by knitting industry’-SITRA publication 1990

OPERATION RESEARCH (APM605)

L	T	P	C
3	0	0	3

Linear Programming Formulation of LP problem; Solution of LP problem by graphical method, simplex method.

Transportation problem Northwest corner rule, inspection method, Vogle Approximation method.

Application of optimality test.

Inventory Control: ABC analysis, Fixation of inventory level, EOQ (Wilson's Formula), Problems related to above theoretical aspects.

PERT / CPM Drawing of CPM and PERT networks, finding critical path Project cost control, determining the value of z- variate in the case of PERT networks, S. D, variances etc.

Game theoryRule of Saddle point determination, Rule of dominance, Mixed strategy approach, Graphical Approach, Problems related to above theoretical aspects.

References:

1. J. Heizer, B.Render., " Production and Operations Management ", Prentice Hall (1993)
 ISBN: 0-205-14048-3.

2. Hamdy A. Taha, " Operations Research an introduction ", Maxmillan Publishing Company, New york, Third Edition, 1982.

3. Hamdy A. Taha, " An introduction to Operations Research ", Maxmillan Publishing Company, New york, Fifth Edition, 1996.

4. Narayan Bhat U, " Elements of Applied Stochastic processes ", John Wiley and Sons, 1972.

5. Fredrick S. Hiller and Gerald J Liberman, " Introduction to Operations Research ", McGraw-Hill,

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Industrial Engineering Series, International edition, 1995.

INDUSTRIAL MANAGEMENT (APM606)

L	T	P	C
3	0	0	3

Principles of management: Planning,organizing,staffing,coordination,direction and controlling-organisational structure, management by objective, management by crisis,management by exception ,Delphi technique

Personal management: nature,scope,objective and importance of personal management,present status,role and profile of agood personnel manager,planning and procurement of manpower-manpower planning-recruitment and selection –job description and specification –tools selection –application ,tests and interview techniques

Employee communication :Channels,media,forms and barriers of communication .How to make communication effective,employee motivation in theory and practice.

Job change:transfer and promotion –layoff and retrenchment,dismissal and discharge-job enlargement and job enrichment

Growth of trade unions in India and its problems:Structure and leadership of trade unions-multiplicity, politiasation and inter and in trade union rivalry.registration and recognition of trade unions-colletive and productivity bargaining.

Handling of grievances:causes and detection –open door policy-model grievance procedured-responsibility and behaviour in handling grievances.management of discipline-changing concept of discipline, disciplinary action and punishment-principles of natural justice-disciplinary procedure and domestic enquiry.

Wage and salary administration :Concept of wage and salary –time and piece wages –money and real wages, minimum,fair and living wages-methods of payment and fixation of wages-collective bargaining and wage boards,statutory methods of fixing wages –payment of wages act.1936,Minimum wages act 1984, Equal remuneration Act 1976 and Payment of bonus Act 1965.

Equitable wage structure-Internal and external wage inequities-job analysis and job evaluation

Labour welfare and labour legislation: Concept of labour welfare-voluntary and stautory benefits and services.Factories Act 1948 shops and establishment act ,labour contract(regulation and abolition)act 1970.

Social security legislation :Factory act of 1948,Industrial dispute act-workmens compensation act 1923.

Workers participation in management –govt. scheme-how to make it a success

References:

- 1.Harold Koontz and Heinz weitrich “Essentials of management”Mc Graw hill publishing company 1990.
- 2.Arun monappa,Mirza Saiyadin S.,”Personal Management” Mc Graw hill publishing company 1991
- 3Hicks&Gullet “Management” Mc Graw hill publishing company 1990.
- 4.John M Nance Vich,”Human Resource management” Irvin/Mcgraw Hill 1998
- 5.Leap L and Crino M. D. “Personal/Human resource management “ Macmillan Publishing 1989.
- 6.Lon Roberts,”Process re-engineering” Mc Graw hill publishing company 1989.
- 7.Lon Roberts “Process Re-engineering”, Mc Graw hill publishing company 1995
- 8.Koontz & O’Donnel “principles of management” Mc Graw hill NewYork,1995.

FASHION BUISNESS (APM607)

L	T	P	C
3	0	0	3

Nature of fashion: terminology of fashion –style-design-taste-classic-Fad-components of fashion-Silhouette-details-texture-colour acceptance-change-principles of fashion

The environment of fashion: demographics and psychographics-economic factors-sociological factors-

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psychological factors-implications of environmental influences.

The movement of fashion: the cycling of fashion –stages of fashion cycle-consumer buying and the fashion cycle-factors influencing fashion movement-recurring fashions-planning the apparel fashion game-pieces and the rules of the game –predicting the movement of fashion.

The leader of fashion: birth of fashion –the designer’s role-types of designer’s-insight &intuition-source of design inspiration – manufactures and the retailer’s role- fashion influence and theories of adoption – Implication for merchandising-fashion leader’s &follower’s

Business of fashion: Scope of fashion business-forms of business ownership-business growth & expansion Children’s/men’s/women’s apparel industries accessories: history of the apparel industry-merchandising & marketing activities-market center-industry trends.

Domestic fashion markets: market center-Mart-market weeks-trade shows-the development of regional fashion center’s trends

Retailing in fashion merchandising & formation: history development of fashion retailing –types of retailer’s fashion merchandise-fashion advertising-Visual merchandising.

E-commerce in Apparel industry –ERP, EDI

References:

- 1.Laine stone, Jean Samples, ‘Fashion merchandising- An introduction ‘Mc-grawHill Book Co.1985
- 2.Easey M(ed),’Fashion marketing’ Blackwell sciences, 1994
- 3.Taarnow, Guerreiro & Judelio,’Inside the fashion Business’ 1995

APPAREL CAD LAB (APM691)

Practical
(All)

List of experiments:

- 1.points-lines-notghes orientations & tools
 - 2.operation of points & lines function
 - 3.operation of notches,orientation and tools
 - 4.operation of modification function
 - 5.Grading the patterns for different sizes
 - 6.creating of patterns from spec sheet for woven garment
 - 7.creating of patterns from spec sheet for knitted garment
 - 8.marker planning-effiency for knitted & garment style
- Design a pattern, grading and marker planning using CAD for the following garments

- 1.Men’s shirt
- 2.men’s T-shirt
- 3.Ladies –Nightwear
- 4.Pants.
- 5.Skirt and Top
- 6.Marker planning for plain, corduroy, jeans, stripe,pencilstripe,plaids,checks,design one way ,two way, different width .
- 7.Marker efficiency calculations, lay lot planning

APPAREL DESIGNING AND DRAPING LAB (APM692)

Practical
(All)

List of experiments

- 1.Design garments on the following themes and drape the same dummies’
- 2.Nature themes
- 3.Historic theme
- 4.Color theme
- 5.Line theme
- 6.Step-up style theme

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SEMINAR (APM693)

L	T	P	C
0	0	3	2

Each student will deliver a lecture on a topic of his/her own choice. He/she must submit a synopsis of the said topic at least one week before the scheduled date to the coordinator. He/she has to submit at least two seminars during the semester and one seminar at the end of semester.

SEMESTER-VII

INFORMATION TECHNOLOGY IN APPAREL INDUSTRY (APM701)

L	T	P	C
3	0	0	3

Computer Systems: Introduction to computers-Classification of Digital computer system-Anatomy of digital computer – computer architecture-Number system- memory units-auxiliary storage Devices- Input Devices- output Devices-computer Software-operating-Programming Languages-general Software Features and trends.

Data base management system :Data processing-Database Management system fundamentals-database design concepts.

Telecommunication :Introduction to Telecommunications-Computer networks-Communication system-Distributed system.

Internet & intranet: Internet & world Wide Web-eletronic mail-Intranets

Mutimedia & Virtual Reality :Introduction to multimedia-multimedia tools-introduction to Virtual reality.

Application of IT :Electronic commerce-Hypermedia-data warehouses and data marts-Data mining-Online analytical Processing (OLAP)-geographic information system(GIS)-computer in Business& Industry-Computersin home-computers in Education & Training-Computers in Entertainment, Science, medicine and engineering

References:

- 1.Alexis leon and Mathews leon”Fundamentals of Information Technology” Leon press,1999
 - 2.Dennis P Curtin “Information Technology”,Tata McGraw hill Pvt Ltd 1999
 - 3.James A Senn”Information Technology in Business”,Prentice Hall of India Pvt Ltd 1998.
- Windows office XP/MOFFICE/MSACCESS/

INDUSTRIAL ENGINEERING (APM702)

L	T	P	C
3	0	0	3

Introduction: History_ development and scope of industrial engineering - role of industrial engineers concepts and definition of productivity and standard of living - causes for low productivity measurement in apparel industry

Work Study: Concepts of basic work content and added work content - Method Study - Process charts and symbols -flow carts-flow diagram- operation analysis- motion economy-design of work plan layout-stop watch procedure-standard data- use of time study in wage incentive levelling - concepts of value engineering and BPR.

Concept Of Performance Rating: Relaxation and other allowances and standard time- Element sheets- methods and mathematical models for assessing work, norms in textile industries including minimum cost

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allocation, line balancing.

Plant Layout: The purpose and importance of facility design, Types of layout problems, Stable Vs. Changing products and styles, plant location.

General Plant Patterns: Process, Product, Groups, Basic Flow patterns

Preliminary Analysis: Steps in planning a plant layout, Product Analysis, Parts list, Assembly chart, Grid.

Brief Introduction Of Production Systems: Whole garment, Section, Progressive bundle.

Machinery, Manpower And Space Requirements: Factors for selecting machinery and space requirements, Calculation of number of machines required, manpower planning- selection and training - learning curve- Ergonomics aspects in apparel industry- Calculation of building space requirements, Balancing production lines.

Relationship Of Activities To Physical Plant Services: Types of activity- Stores, Health, Safety, Feeding, Convenience related services. The activity relationship chart.

Operation And Work Area Planning: Work area planning, Templates, Aisle Development.

Materials Handling: Objective of materials handling, Methods of classifying materials and handling equipments. Descriptions and characteristics of material handling equipment specialised material handling equipment related to the apparel industry, Drafting techniques, plant measurement methods.

REFERENCES

1. Khanna.O.P., "Industrial Engineering and Management", Danpat Roi & Sons, 1987.
2. Ralph M.Barnes, "Motion and Time study Design and Measurement of Work", 7th Edition, John Wiley & Sons, New York, 1980.
3. David C.Alexander and Baur Mustaga Pulat, "Industrial Ergonomics", A Practitioner's Guide, Institute Industrial Engineers, USA 1985.
4. James M.Apple, "Plant Layout and Materials Handling", 3rd Edition, John Wiley and Sons, 1997.
5. Guinness.M. & Stein, "Mechanical and Electrical Equipment for Building" 5th Edition, John Wiley and sons, 1971.
6. Elwood .s.Buffa, "Modem Production & Operations Management", Wiley Eastern, 1991.
7. Introduction toW ork Study - ILO, 1987.

CLOTHING SCIENCE (APM703)

L	T	P	C
3	0	0	3

Fabric appearance : fibre structure,selection of fibre,yarn structure,yarn structure and fabric construction; their effect on fabric appearance. Study of properties such as pilling,fastness and luster.

Comfort: the effect of fibre properties, yarn structure and fabric construction on the fabric properties such as drapability,air permeability, moisture absorption, bending rigidity,sheerness,selection of fibres and yarn structure and its effect on comfort properties effect of fabric construction

Durability: study of tensile strength, tearing strength, bursting strength with respect to fibre properties, yarn structure and fabric design .

Fabric as protection :Easy care the fibre properties and chemical treatments that decide the fabric properties such as crease recovery, shrinkability,pilling formation .

Fabric engineering : for given end use,designing of fabric from selection fibre,type of yarn manufacture,fabric design to finishing treatments

References:

1. Y.Li and D.X-Q Dai ,Biomechanical Engineering of Textile and Clothing,WoodHead Publishing Ltd.England.
2. Y.Li,A.S.W Wong Clothing Biosensory Engineering WoodHead Publishing Ltd.England.
- 3.K.Slater,Comfort Properties of Textiles,Textile Progress,ITI,1977

APPAREL MARKETING AND MERCHANDISING (APM704)

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Syllabus

L	T	P	C
3	0	0	3

Organization of the Apparel Business :Introduction to apparel industry - organization of the apparel industry types of exporters Business concepts applied to the apparel industry - International trade.

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

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

Sourcing: Need for sourcing - sourcing materials - manufacturing resources planning - principles of MRP – Overseas sourcing - sourcing strategies. Supply chain and demand chain analysis - Materials management for quick response - JIT technology Documentation:Order confirmation, various types of export documents, Pre-shipment Post -shipment documentation, Terms of sale, payment, shipment etc.

Export incentives: Duty drawback, DEPB, I / E license - exchange control regulation - foreign exchange regulation acts - export management risk - export finance. WTO / GATT / MFA - Functions and objectives, successes and failures.

References:

1. D. Sinha., - " Export Planning and Promotion ", - IIMS, Calcutta (1989).
2. Tuhin K. Nandi., - " Import - Export Finance ", - IIMS, Calcutta (1989).
3. Elaine Stone, Jean A. Samples., - " Fashion Merchandising ", McGraw Hill Book Company (1985) ISBN: 0 - 07 - 061742 - 2.
4. S. Shivaramu., - " Export Marketing - A practical guide to Exporters ", Wheeler Publishing (1996) ISBN: 81-7544-166-6.
5. J.A. Jarnow, M.Guerreiro, B.Judelle., - " Inside the Fashion Business ", Macmillan Publishing Company (1987)

INTERNATIONAL BUSINESS & DOCUMENTATION (APM705)

L	T	P	C
3	0	0	3

Export marketing of Apparel, global scene,Prospects For India Apparel in Overseas market, globalization GATT & WTO

Multi fibre Agreement and Bilateral Textile agreements signed by India with importing quota countries.NAFTA,AGOA:

Govt of India ‘s export entitlement policy on garment exports.

AEPC’s role in the administration of export entitlement policy.

Export promotional activities of AEPC

Facilities available for garment exporters.cash compensatory support.

Duty draw back.,Export finance through banks.Export credit guarantee corporation

Export-Import Bank,Market Development Assistance;1005 export oriented scheme of the Govt. of India:Free Trade Zones;How to start a garment Exporting company:Export contracts;Documents connected with exports;exchange control regulation relating to exports

References

- 1.Darlie O. Koshly, “Effective export Marketing of Apparel”,Global Business Press 1996
- 2.Hearle J.W.S.,Hines T., and Suh M (Eds) “Global marketing Of Textiles:Journal Of Textile Institute special issue” The textile institute 1997
- 3.Dickerson K. G. “Textiles and Apparel in the global economy” Prentice Hall,3rd Ed 1998.

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DESIGN CONCEPT OF APPAREL MACHINERY AND EQUIPMENTS (APM706)

L	T	P	C
3	0	0	3

Design concept of knives in cutting machine- selection of knives-straight,rotary,band knives,Grinding and cooling systems in cutting machines.

Laser cutting ,Water jet cutting machine,Fabric feeling Systems- top feed and differential drop feed mechanism in sewing machine,Stitching mechanisms –Single needle, multi needle,design of needles Yarn tensioning mechanism in sewing machine.

Yarn tensioning device in single chain lock stitching and flat lock stitching machines,

Application of electronic control systems in sewing machines Design concept of Button holing machines,Button fixing machines,Finishing machineries,auto folding,press buck, auto packing mechanisms

References:

- 1.Solinger Jacob' Apparel Manufacturing Analysis' Clumbia boblin Media,1988
2. Harold carr & Barbara Lathon' The technology of clothing manufacture',Black well sciences,1996
- 3.Manual of Juki corporation Ltd.
- 4.Manual of Brother Industries Ltd.
- 5.Manual of Revo Industrial sewing machines corporation Ltd

INDUSTRIAL TRAINING (APM791)

Practical/Fieldwork

L	T	P	C
0	0		3

1. Maintenance schedule followed machine-wise/department-wise, preventive maintenance program for different departments, organisational details of maintenance department.
2. Details of ancillary equipment , machinery audit in different sections, knowledge of the working principle, production rates and efficiencies of the machine available in the department.
3. Details of quality control/quality assurance program followed in the factory, instrument available in the quality control section and/or process control used in the factory, on-line quality control system.
4. Pollution control measure/environmental engineering practices adopted by the factory, equipment/devices used by the factory to control the noise, safety measures taken by the factory to prevent accidents and hazards.
5. Preparation of factory report for day-to-day work, authenticated by a responsible person (not below the level of shift-in-charge).

SEMINAR ON INDUSTRIAL TRAINING (APM792)

L	T	P	C
0	0	0	3

Each student will deliver a lecture on his/her training only.. He/she must submit a synopsis of the training at least one week before the scheduled date to the coordinator. He/she has to submit one seminar at the end of semester.

MINOR PROJECT (APM793)

L	T	P	C

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0	0	9	6
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In this semester, students are required to define the problem, analyse potential causes, identify possible solutions, select the best solution, develop an action plan, submit a written report and present the initial progress of the work in a seminar for assessment as per university norms.

SEMESTER-VIII

VALUES AND ETHICS OF PROFESSION-(HU 801)

L	T	P	C
3	0	0	3

1) Science, Technology And Engineering As Knowledge And As Social And Professional Activities

Effects Of Technological Growth:

Rapid Technological Growth And Depletion Of Resources. Reports Of The Club Of Rome.

Limits Of Growth; Sustainable Development

Energy Crisis; Renewable Energy Resources

Environmental Degradation And Pollution. Eco-Friendly Technologies. Environmental Regulations.

Environmental Ethics Appropriate Technology Movement Of Schumacher: Later Developments

Technology And Developing Nations. Problems Of Technology Transfer. Technology Assessment, Impact

Analysis Human Operator In Engineering Projects And Industries. Problems Of Man Machine Interaction.

Impact Of Assembly Line And Automation. Human Centered Technology

2) Ethics of Profession Engineering profession: Ethical issues in Engineering practice. Conflicts between business demands and professional ideals . Social and ethical responsibilities of Technologists. Codes of professional ethics. Whistle blowing and beyond. Case studies.

3) Profession and Human Values Value Crisis in contemporary society

Nature of values: Value Spectrum of a 'good' life Psychological values: Integrated personality; mental

health Societal values: The modern search for a 'good' society , justice, democracy, secularism, rule of

law; values in Indian Constitution , Aesthetic values : Perception and enjoyment of beauty, simplicity,

clarity

Moral and ethical values:

Nature of moral judgments; canons of ethics; ethics of virtue; ethics of duty; ethics of responsibility

References / Books:

1. Stephen H.Unger, Controlling Technology : Ethics and the Responsible Engineers, John Wiley & Sons, New York, 1994 (2 nd Ed)
2. Deborah G. Johnson, Ethical Issues in Engineering , Prentice Hall, Englewood Cliffs, New Jersey, 1991.
3. A.N.Tripathi, Human Values in the Engineering Profession, Monograph published by IIM, Calcutta, 1996.

ENERGY SCIENCE (TT801)

L	T	P	C
3	0	0	3

1.Introduction – sources of energy, classification of energy sources, quality and concentration of an energy source, characteristics temperature

2.Conventional energy sources: coal, oil, gas

3.Non-conventional sources of energy: biogas, geothermal, solar, nuclear, wind, and hydel

4.Energy conservation: basic principles, thermal insulation in conservation, conservation through control, electric energy conservation in building-heating and lighting, energy efficient motors, tariff and power factor improvement in power system

5. Energy conservation in industry (textile and similar): different gadgets, machines, equipments,

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transportation, material handling

6. Energy auditing: basic principles, utility, and case studies,

Text books and Articles:

1. Decentralised Energy-options and Technology edited by N.K. Bansal,

2. RAS, Sectoral energy demand in India, regional energy Development Programme, Planning Commission, Govt. of India, New Delhi.

3. Advances in solar energy technology, H.P. Garg, D. Riedel Publishing Company, Netherlands, 1987.

ASSIGNED PROJECT II (APM891)

L	T	P	C
0	0	12	8

In this semester, students are required to present a dissertation reporting all the aspects of the work and defend the reports in a seminar arranged for the purpose of final assessment as per university norms.

PERSONALITY DEVELOPMENT (APM881)

L	T	P	C
0	0	3	2

Communication effectiveness, formal and informal communication ability, inter personal skills and rapport, the art of listening, role expectation, role ambiguity and conflict, written communication, presentations capability, general personality test. etc.

COMPREHENSIVE VIVA-VOCE (APM894)

L	T	P	C
0	0		4

ELECTIVES

A. TOTAL QUALITY MANAGEMENT (APM802)

L	T	P	C
3	0	0	3

B. KNITTING TECHNOLOGY (APM802)

L	T	P	C
3	0	0	3

C. MARKETING RESEARCH AND ADVERTISING (APM802)

L	T	P	C
3	0	0	3

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D.INDUSTRIAL CLOTHING (APM802)

L	T	P	C
3	0	0	3

E.HOME TEXTILES (APM802)

L	T	P	C
3	0	0	3

F.ENTREPRENEURSHIP (APM802)

L	T	P	C
3	0	0	3

G.SUPPLY CHAIN MANAGEMENT AND LOGISTICS (APM802)

L	T	P	C
3	0	0	3

H.APPAREL PRODUCT DEVELOPMENT (APM802)

L	T	P	C
3	0	0	3

I. INTELLIGENT GARMENTS (APM802)

L	T	P	C
3	0	0	3

J.APPAREL WORK MEASUREMENT (APM802)

L	T	P	C
3	0	0	3

K.STRATEGIC MARKETING (APM802)

L	T	P	C
3	0	0	3

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L.FASHION COMMUNICATION (APM802)

L	T	P	C
3	0	0	3

M.ENTREPRENEURSHIP DEVELOPMENT (TT802)

L	T	P	C
3	0	0	3

N.FASHION PHOTOGRAPHY (APM802)

L	T	P	C
3	0	0	3

O.PROTECTIVE GARMENTS (APM802)

L	T	P	C
3	0	0	3

TOTAL QUALITY MANAGEMENT (APM802)

L	T	P	C
3	0	0	3

Introduction

Definition of Quality, Dimensions of Quality, Quality Planning, Quality costs - Analysis Techniques for Quality Costs, Basic concepts of Total Quality Management, Historical Review, Principles of TQM, Leadership – Concepts, Role of Senior Management, Quality Council, Quality Statements, Strategic Planning, Deming Philosophy, Barriers to TQM Implementation. TQM principles

Customer satisfaction – Customer Perception of Quality, Customer Complaints, Service Quality, Customer Retention, Employee Involvement – Motivation, Empowerment, Teams, Recognition and Reward, Performance Appraisal, Benefits, Continuous Process Improvement – Juran Trilogy, PDSA Cycle, 5S, Kaizen, Supplier Partnership – Partnering, sourcing, Supplier Selection, Supplier Rating, Relationship Development, Performance Measures – Basic Concepts, Strategy, Performance Measure.

Statistical process control (SPC)

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

TQM tools

Benchmarking – Reasons to Benchmark, Benchmarking Process, Quality Function Deployment (QFD) – House of Quality, QFD Process, Benefits, Taguchi Quality Loss Function, Total Productive Maintenance (TPM) – Concept, Improvement Needs, FMEA – Stages of FMEA.

Quality systems

Need for ISO 9000 and Other Quality Systems, ISO 9000:2000 Quality System – Elements,

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Implementation of Quality System, Documentation, Quality Auditing, QS 9000, ISO 14000 – Concept, Requirements and Benefits.

Text book:

1. Dale H.Besterfield, et al., Total Quality Management, Pearson Education Asia, 1999. (Indian reprint 2002).

References:

1. James R. Evans & William M. Lindsay, The Management and Control of Quality, (5th Edition), South-Western (Thomson Learning), 2002
2. Feigenbaum. A. V. "Total Quality Management, McGraw-Hill, 1991.
3. Oakland. J. S. "Total Quality Management Butterworth – Heinemann Ltd., Oxford. 1989.
4. Narayana V. and Sreenivasan, N. S. Quality Management – Concepts and Tasks, New Age International 1996.
5. Zeiri. "Total Quality Management for Engineers Wood Head Publishers, 1991.

KNITTING TECHNOLOGY (APM802)

L	T	P	C
3	0	0	3

Weft Knitting: Single Jersey machine - Basic knitting elements - Types and functions - Knitting cycle Cam system - Three way technique to develop designs - Knit, tuck, miss - Effect of stitches on fabric properties. Single Jersey - Derivatives and ornamentation.

Circular Rib Knitting Machine - Basic knitting elements - Types and functions - Knitting cycle Fabric characteristics and derivatives.

Purl Knitting Machine: Knitting elements - Types and functions - Knitting cycle - Fabric characteristics and derivatives

Interlock Knitting Machine: Knitting elements - Types and functions - Knitting cycle - Dial Cylinder timings - Fabric characteristics and derivatives.

Jacquard Knitting Machine: Needle selection mechanism - Pattern wheel, pattern drum, punched steel tape, punches paper roll, electronic patterning devices.

Flat Knitting: Cam system - Knitting action yam feeding, direct and indirect racking mechanism. Storage and positive feed devices and their importance.

Special types knitting machines - Terry knitting, socks knitting.

Maintenance of weft knitting machines.

Modern developments in weft knitting.

Warp Knitting:

Lapping variations - Tricot - Raschel- Two needle bar raschel and simplex machine. Tricot and Raschel machine - Pattern wheels and pattern chains - Basic stitches - Notations - Single bar, two bar, multi bar machines, types of threading, production of nets, curtains, heavy fabrics, elasticized fabrics.

References :

1. Ajoankar. D. B., "Principles of Knitting", Universal Publishing Corp., 1998

REFERENCES:

2. David Spencer., "Knitting Technology", Pergamon Press, Oxford 1982 Wilkens. C., Wilkens. U., "Warp Knit Machine Elements", 1997.

MARKETING RESEARCH AND ADVERTISING (APM802)

L	T	P	C

**B.Tech in APPAREL PRODUCTION MANAGEMENT
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3	0	0	3
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Marketing Research: Introduction to Marketing Research - A preview of Marketing Research Research and Marketing decisions, design, implementation and control of the marketing research projects.

Basics Of Sampling And Measurements: Sampling, concepts of measurements.

Collection Of Data: Information collection - Survey research, questionnaire design, interviewing, observation, panels attitude measurements, experimentation.

Analysis Of Data: Data preparation and summarization, data analysis, multivariable techniques in marketing research.

Research Results: Applications, presentation and ethics - Market analysis and forecasting, presentation of research results. Social and ethical issues in Marketing Research

Advertising: The background of advertising and its social implications - a framework of advertising, history of advertising - Advertising and the economy, advertising and society, control of advertising.

The Organization Of Advertising: The advertising department - Manufacturers - media and retailers - The Advertising agency.

Advertising Management: Advertising and marketing planning, the opportunity for advertising Advertising and marketing mix, sales promotion, the advertising expenditure, advertising and consumer behavior, marketing intelligence, evaluation advertising effectoners, the marketing plan - An example.

Different Kinds Of Advertising: Retail advertising - Direct mail advertising, industrial advertising, and international advertising.

Advertising Media Planning And Selection: Advertising media planning, newspapers, consumer magazines, firm publications and business publication, television, radio, out of home media, other media a!ld the media plan - example:

Advertising Creativity: Avertising and the creative process, advertising copy, layout, story boards and arts, print and broadcast, creativity - example

Non Commercial Advertising And Branding

References:

1. Donald.S. Tull., Del I. Hawkins, "Marketing Research - Measurement methods", Prentice Hall of India, 1997.
- 2 S.A.Chuawala, K.C.Sethia, "Foundations of Advertising - Theory and Practice", Himalaya Publishing House, 1997.
- 3 Ronald .M. Weiers, "Marketing Research", Prentice Hall Inc., 1984
- 4 Paul. E.Green, Donalds Tull and Geral Album, "Research for Marketing Decisions", Prince Hall Inc., 1999
5. Harper.W.Boyd, Jr. Ralph West Stanley F Stasch, "Marketing Research", Richard D Irwin Inc., 1994
6. James S.Narris, "Advertising", Prentice Hall Inc., 2000
7. David A.Aaker, Rajeev Patra, John G.Myers, "Advertising Management", Prentice Hall ofIndia, 1994.

INDUSTRIAL CLOTHING (APM802)

L	T	P	C
3	0	0	3

Introduction: Clothing for soldiers.

Fire service personnel, workshop robes - Low weight and bulk - Durability requirements

Requirement of protection against high intensity. Thermal radiation and flame resistance.

Requirement of insulation and moisture - Vapour permeability - Requirements of ballistic protection. low heat stress

Requirements for barriers for chemical war fare agents - Wind proof ness requirements.

Waterproof ness requirements. insect proof ness requirements, snow shedding properties of clothing.

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Uniforms: Hospital textiles: Gowns for operating staffs, theatre masks, non-woven swabs, post operation dress, warp knitted breathable laminated polyester fabrics.

REFERENCES:

1. Bajaj. P., and Sengupta.A.K., "Protective Clothing", The Textile Institute, 1992.
2. Johnson J.S., and Mansdork.S.Z., "Performance of Protective Clothing", ASTM, 1996
3. Edited by P.W.Harrison, "The design of Textiles for Industrial Application", The Textile Institute, Manchester, 1998.
4. Corbman.B.P., "Textiles: Fiber to Fabric", McGraw Hill Book company, Singapore, 1985.

HOME TEXTILES (APM802)

L	T	P	C
3	0	0	3

Introduction To Textile Furnishings; Definition - Different types of furnishings materials Woven and non-woven - factors affecting selection of home furnishings.

Floor Coverings: Hard floor coverings, resilient floor coverings, soft floor coverings, rugs, cushion and pads - Use and care.

Wall Coverings: Types- Use and care.

Home Decoration: Draperies - Choice of fabrics - Calculating the amount of material needed - Different types of doors and windows - Their applications - Curtains - Types of curtains. Method of finishing draperies Tucks or pleats.

Uses of drapery rods, hooks, tape rings and pins.

Living Room Furnishings: Sofa covers - Wall hangers - Cushion - Cushion covers - Upholsteries Bolster and bolster covers.

Bed Linens: Definitions - Different types of bed linen - Sheets - Blankets - Blanket covers - Comforts - Comfort covers - Bed spreads - Mattress and mattress covers - Pads - Pillows and pillow covers - Their uses and care.

Kitchen Linens: Definitions - Types of kitchen linens - Dish cloth - Hand towels - Fridge cover - Fridge .handle cover - Mixie cover - Grinder cover - Their use and care.

Table Linen: Definitions, types - Table linens - Table mats - Table cloth - Hand towels - Selection - Use and care.

Recent Trends In Home Furnishings.

REFERENCE

- 1.Alexander,N.G., "Designing Interior Environment", Mas Court Brace Covanorich,Inc.,New York, 4th edition 1996.
- 2.Donserkery,K.G. "Interior decoration in India", D.B. Taraporeval sons and co. Pvt.Lts., 3rd edition 1996.

JOURNALS:

1. Clothesline.
- 2.The Indian Textile Journal.
3. Colourage.

ENTREPRENEURSHIP (APM802)

L	T	P	C
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**B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus**

3	0	0	3
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Need, Scope And Characteristics Of Entrepreneurship: Social scheme for Entrepreneurs, exposure to demand based, resource based, service based, import substitute and export promotion industries. Identification of opportunities.

Market Survey Techniques: Need, scope and approaches for project formulation, criteria for principles for product selection development, structure of project report, choice of technology, plant and equipment.

Institutions, Financial Procedure And Financial Incentives: Financial ratios and significance, books of accounts, financial statements and funds flow analysis.

Energy Requirements And Utilization: Resource management, men, machine and material, critical path method (CPM) - Program Evaluation Review Techniques (PERT) as planning tools for establishing SSI.

Techno Economic Feasibility Of The Project: Plant layout and processes planning for the product, quality control/ quality assurance and testing of products, costing and pricing.

Elements Of Marketing And Sales Management: Nature of product and market strategy, -packing and advertising, after sale service, social responsibility and business ethics

Important Provisions Of Factory Act: Sales of good act, partnership act, income tax, sales tax and excise rules, licensing, registration, municipal by laws and insurance coverage.

Dilution Control, Creativity And Innovation: Problem solving approach, Strength, Weakness, Opportunity and Threat (SWOT) techniques, management of self and understanding human behavior, coping with uncertainties, stress management, positive reinforcement.

REFERENCES:

1. Prasanna Chandra, "Project - Preparation, APPRAISAL and Implementation" Tata MCGraw Hill, NewDelhi, 1990.
2. Philip Kotler, "Marketing Management" Prentice all, 1990
3. Prasanna Chandra, "Fundamental Financial Management" TataMcGraw Hill Publications, 1995.
4. "How to set up Ready made Garment Export industry", Part I and II, Industrial Estate Manufacturers Association, 1989

SUPPLY CHAIN MANAGEMENT AND LOGISTICS (APM802)

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Logistics: Scope, elements and system, Need for logistic engineering. Meaning of Logistics - Reliability factors, Maintainability factors, Supply support factors, Transportation, Packaging and handling factors, Test and support equipment factors, Organization factors, Facility factors, Software factors, technical data, information

system factors, Availability factors, Economic factors, Effective ness factors - in an Apparel Industry - Importance of Supply Chain Flows, Supply Chain relationships - channel structure, economics of distribution,

channel relationships. Integrated logistics service providers (Third Party Alliance)

Logistics Management: Logistics planning, Development of a Work Breakdown Structure (WBS), Scheduling of Logistics tasks, Cost Estimating & Control - Activity Based costing and logistics. Organisation for logistics, Management & Control, Reverse logistics process - Practice in Apparel Industry. Analyzing Supply Chains: Decision phases in a Supply Chain, Process view of Supply Chain, Supply Chain performance - Strategies, achieving strategic fit, Expanding strategic scope, Supply Chain Drivers & Obstacles.

Planning Demand and Supply in a Supply Chain: Demand forecasting in a Supply Chain, Aggregate

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Planning, Planning Supply & Demand in a Supply Chain: managing predictable variability. Managing Economies of Scale in a Supply Chain: Cycle inventory, Managing Uncertainty in a Supply Chain: Safety Inventory

Role Of It In Supply Chain: Supply Chain Information Technology in practice. Co-ordinating a Supply Chain and the role of e-business: lack of Supply Chain co-ordination and the Bullwhip effect, Obstacles to coordination in a Supply Chain, Managerial Levers to Achieve co-ordination, ED!.Building Strategic Partnerships & Trust within a Supply Chain. The impact of E-business in a Supply Chain, value of E-business in different industries, setting up e-business in practice.

Global Logistics: Logistics in a Global economy, views of Global logistics, Global Operating levels, Interlinked Global economy, Global Supply Chain.

Just-in-time & Quick Response Logistics

The Japanese Philosophy- Quick Response Logistics- Vendor Managed Inventory- Logistics Information Systems logistics.

REFERENCES:

1. Sunil Chopra, Peter Meindal, "Supply Chain Management (Strategy, Planning and Operation). Prentice Hall,2001
2. Benjamin S. Blanchard, " Logistics Engineering and Management". Inc Upper saddle river, New Jersey, 2003.
- 3.Donald J.Bowersox, Davis J.Closs "Logistical Management - The Integrated Supply Chain Process", Prentice Hall, 2002
- 4.Martin Christopher, "Chap.7 of Logistics & Supply chain Management - Strategies for Reducing cost & Improving Service", 2nd Edition, 2003.
- 5.Douglas M. Lambert, James R.Stotk, Lisa, M.Ellram, "Fundamentals of Logistics Management"., Prentice Hall, 2002.

APPAREL PRODUCT DEVELOPMENT (APM802)

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The Fashion Vs The Real World: Introduction to Fashion Business. Segments of the Garment Industry - Changes in today's Fashion Industry - The customer; different generations, motivations, clothes.

Developing New Product: Idea Generation, Idea Screening, Concept testing, Business Analysis, the product development Process, group product development, research, Test Marketing, Commercialization.

Fashions Triangle Of Balance - Building of the first design ideas - planning to costing - line building - from spec to samples - production selling - three seasons.

Economic Analysis: Evaluation of Portfolio of products or projects - introduction and purpose of economic analysis - market potential - market demand - estimating sales- estimating cost & prof

Technology, Politics And Geography: Apparel online, politics of Apparel importing - the geography of manufacturing; Manufacturing in the United States.

Apparel Business In The 21st Century: Fashion as the Global business -The bright future of Fashion - Licensing - segments of Fashion Business - Garments - meaning. Retail trade terminology.

REFERENCES:

- 1.Jacob Solinger, " Apparel Manufacturing Analysis", Textile Book Publisher, New York, 1988.
- 2.Maurice J. Johnson & Evelyn c.Moore, "Apparel Product Development" second edition, Prentice Hall Upper saddle river, New Jersey, 1999
- 3.Donald R. Lehmann, Rusell S.Winer, "Product Management", McGraw Hill International edition., 1996

INTELLIGENT GARMENTS (APM802)

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Introduction To Smart Textiles: Smart properties - structural, aesthetic, functional and their advantages.

Smart Textile Materials: Smart Viscose fiber, Nano fibers, Photoadaptive fibers, Chameleon fibers, Conductive fibers - properties of above fibers and their applications in textiles and apparels. Surface structured silk and wool - special effects. Encapsulation technique in production of intelligent fibers. Shape memory polymers - Thermo sensitivity, other chemical properties.

Interactive Textiles: Comfort - psychological, sensorial, thermo physiological. Environment sensor - changing color, temperature and humidity sensors creating energy and heat. Body sensor - moisture management,

heat and moisture transfer properties, heat and pressure receptors, air permeability.

Speciality Finishes: Softening - handle variation, elastic soft handle. Resin finishing - crease free effects. Emerging and raising - special effects and designs.

Intelligent Wears:

Comfort Wear: Thermo wear to give warmth, multilayer sweater with thermal insulation. Smart Viscose, trousers/ shirts - cotton look and feel; viscose intimate apparels for silken feel and comfort; viscose lycra knits for fashion and comfort.

Active Wear Sports Wear: Breathe thermo wear, anti sweat apparel, sports underwear, anti drag swim wear, athletes wear with pressure receptors, temperature controlled garment, liquid insulated garment, hitech cooling vest, energy expenditure wear, futuristic jogging suit.

Medical Wear: Antimicrobial resistant wear, anti cellulites panty hose, undergarment for catheters, life shirts, ceramic coated health care apparels

Protective Wear: Security wear, protection from UV radiation, chemical, nuclear effects - bullet proof fabrics, military applications - during war and for medical treatment.

Wearable Electronics: Introduction - model of a design - business executive applications- medicine safety - their applications - entertainment and recreational applications - musical jackets - electronic table cloth.

REFERENCES:

- 1.Sanjay Gupta, "Smart Textiles" - Their Production and Marketing Strategies. Printers Bhumica, NewDelhi, 2000
2. VigoT.L., "Intelligent Fibers", Journal of textile Institute 1999,90 Part 3 Textile Institute
3. High Performance Textiles, 1999, International Newsletter
4. Advances in Textile Technology, 2000
5. "Intelligent Textiles for Garments". The Indian Textile Journal May 1999/2000

APPAREL WORK MEASUREMENT (APM802)

L	T	P	C
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Operation Analysis: Objectives - classification of a worker's behaviour- observation methods - work sampling procedures - rough standard for the number of observation times - allowance rate - explanation of the points to be improved - exercises on operation analysis.

Process Analysis: Purpose and application - kind of analysis - notation - standard method of processing material.

Motion Study: Aim - Level of analysis - type of analysis - method of analysis - PTS - Work Design - Standard operation.

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Time Study: Aim - measuring method - observation procedure - determination of check prints - time report system - sewing time report - setting the standard time - leveling - skill- standard allowance rate - practical use of the time study.

REFERENCES:

1. Khanna.a.P., "Industrial Engineering and Management", Danpat Roi & Sons, 1987.
2. Jacob Solinger, "Apparel Manufacturing Handbook, Analysis, Principles and Practice" Van Nostrand Reinhold Company, 1992.

STRATEGIC MARKETING (APM802)

L	T	P	C
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Marketing Strategy And Planning: Strategic vision, finding competitive advantage, Business strategy, corporate mission, business composition, corporate strategy; Strategy Analysis, Analyzing current strategies, Generic strategies, Strategic issues, developing strategy plan for each business.

Segmenting Markets: - Segmentation, Targeting and Positioning - Identifying market segments Forming segments- Strategic Analysis of market segments - Customer Analysis - Competitive Analysis Positioning Analysis.

Designing Market Strategy: Market targeting and Positioning strategies - relationship strategies, Planning for new products.

Marketing Program Development: Product branding and customer service strategies - Product Quality & Competitive advantage, Managing existing products - PLC analysis, Developing Product strategies, Branding strategy, Customer service strategy, Distribution, pricing strategies, Promotion, Advertising and sales promotion strategies.

Marketing Strategy, Implementation And Control: Marketing Plan, Implementation, Strategic Evolution and control, Performance criteria & information, Performance assessment and action.

REFERENCES:

1. David W Cravens, "Strategic Marketing", Prentice Hall Inc 1997
2. Philip Kotler, "Marketing Management ", Prentice Hall Inc 1996

FASHION COMMUNICATION (APM802)

L	T	P	C
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Essentials Of Fashion Communication: Introducing Communication - objective, media, types barriers and principles.

The Inwards Of Communication: Communication as coding and decoding - roots of misunderstanding - original message - reconstructed message - non verbal symbols - seven communication road blocks.

Non Verbal Communications .Written Communication: needs, functions and kinds of business letters, Effective Business letter, layout, planning the letter, enquiries and replies, orders and their execution. Collection letters, circular letters, Sales letter, Bank correspondence, import and export correspondence.

The Written Mode - The Body language of business letters. Business letters -the winning tone - smart e - mail

Spoken Mode: telephonic and teleconferencing Effective Business presentations, Meeting without yawns. Communicating Across Cultures.

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REFERENCES:

1. Matthukutty M. Monippally "Business Communication" Macmillan Publishing Co. 1999
2. Houp, Kenneth.W & Thomas E.Pearsall , "Reporting Technical Information".Macmillan Publishing Company, Inc. New York, 1980.

ENTREPRENEURSHIP DEVELOPMENT (TT802)

L	T	P	C
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1. Creativity and innovation and their Commercialization (Lecture: 1 hour)
What is creativity? What is innovation? Example of creativity that leads to innovation. The commercialization of creative and innovative ideas. Trends in technology development.
2. Entrepreneurship: An Overview (Lecture: 3 hour)
Definition of an entrepreneur Entrepreneurship Management And Ownership, Contrast entrepreneurship with management, Entrepreneur: Their Characteristics, Role of an entrepreneur in Industrial development,. Starting A New Business, Business Planning/ Strategic Planning And Strategic Management, Site Selection And Layout
3. Establishing New Venture (Lecture:8 hour)
Opportunities for Entrepreneurship, Meaning and Definition of SSI, Ancillary industry, Importance of SSI, Government policies for SSI. Basic criteria for final selection of a business opportunity, Amount of investment, Nature of technology. Input requirement for setting up SSI , Institutional support to SSI at State & National level. Products Identification in various fields, Causes of industrial disputes , Machinery for settlement of disputes, Idea of risk management.
4. The Business Plan Development (Lecture: 4 hours)
What is a Business Plan? The Need for a Business Plan, Define the structure of a business plan, Discuss the critical elements of an effective business plan, Preparing a Business Plan: a) Forecasting Developments and Charting an Action Plan b) Identifying the Product/Service c) Evaluating the Business Venture d) Market Research and Feasibility Study; Differentiate the feasibility study and the business plan, Identify requirements for venture feasibility.
5. Enterprise Management; (Lecture: 5 hour)
Identify mechanisms of and requirements for growth of a venture, Describe effective organizational structures, Discuss the operational challenges for entrepreneurships, Review alternative operations strategies for adapting an organization to changes in the marketplace, Differentiate entrepreneurial and traditional corporate career paths, Organizational structure relevant to small organization, Procedures involved in the management of man, machine, material and methods of production and operation.
6. Financing Business (Lecture: 4 hours)
Type of capital, importance of financial management in context to small scale industry, Sources of Debt Financing, Sources of Equity Financing ,Financial Controls
7. Marketing Products (Lecture: 2 hours)
Creating the Marketing Plan, Pricing for Profit, Creative Advertising and Promotion.
8. Indian Entrepreneurship and Case Studies (Lecture: 4 hours)
Overview and analysis of successful entrepreneurs (such as Jamshedji Tata,G.D. Birla, Aditya Birla, Dirubhai Ambani, Azim Premji etc.) ,Discussion of Indian business environment

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Text Book and Articles:

- 1.Peggy A. Lambing (1999), Entrepreneurship, 2/e. Prentice Hall., 2.David Carson, Stanley Cromie & Pauric McGowan (1996), Marketing and Entrepreneurship in SME's: An Innovative Approach, 1/e. Prentice Hall. 3.Donald E. Vaughn (1997), Financial Planning for the Entrepreneur, 1/e. Prentice Hall.4.William L. Megginson, Mary Jane Byrd & Leon C. Megginson (1999), Small Business Management: An Entrepreneur's Guidebook, 3/e. McGraw Hill. 5.Cengiz Haksever et al (1999), Service Management and Operations, 2/e. Prentice Hall. 6.Sally Jones (1999), Principles of Taxation for Business and Investment Planning, 3/e. McGraw Hill. 7.Barjoyai Bardai (1996), Indian Tax Policy. Pelanduk Publication. 8.V. Anantaraman, Indian Industrial Relations:: Law & Practice. UPM Press, 1997, Serdang. 9.Success (Magazine) 10.Fortune 500 (Magazine) 11.Business Today(Magazine) 12.Businessworld (Magazine) 13.Merrill Lynch, "How to Read a Financial Report" 14.Stancill, "How Much Money Does Your New Venture Need?" HBR May-June 1986 15.Siegel, "Financial Plan," Business Plan Guide Chp 13 16.Sahlman, "How to write a great business plan," Harvard Business Review 17.Rich & Gumpert, "How to write a winning business Plan," The Entrepreneurial Venture Chp 10 18.WebCafe: Ernst & Young, "Guide to Producing a Business Plan" 19.Merrill Lynch, "How to Read a Financial Report" 20.Stancill, "How Much Money Does Your New Venture Need?" HBR May-June 1986 21.Siegel, "Financial Plan," Business Plan Guide Chp 13 22."Alternative Sources of Financing," HBS (9-384-187) 23.Internet: Background on Wharton Entrepreneurial Programs: (www.wep.wharton.upenn.edu) 24.WebCafe: Ernst & Young, "Guide to Producing a Business Plan" 25.WebCafe: Steve Jurvetson and Tim Draper, "Viral Marketing"

FASHION PHOTOGRAPHY (APM802)

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Camera Definition- Part of Camera Classification and types of camera- Applications Disadvantages.
 Photography - Principle , Indoor Photography - Needs and Methods - Lighting Techniques Methods and Equipments.
 Outdoor Photography Needs.- Lighting Techniques Methods and Equipments ..., Comparison of Outdoor Photography by with Indoor photography.
 Photography Techniques and Equipment for different fields -Modelling- Newspaper -Magazines - Occasions -Fashion Shows,
 Photography using Digital Cameras Video Photography ,-' Image Mixing ..' Application of Computers in Photography -Printing Techniques.

REFERENCES

1. W.R.Miler, "Basic Industrial Arts, Plastics, Graphic Arts, Powermechanics, Photography, McKnight Publishing Co., Illinios,1978
2. John Hedge, "Photography Course", John Hedge c1992.

PROTECTIVE GARMENTS (APM802)

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Selection of fibres -suitability and properties of high performance fibres for various protective clothing- chemical composition and physical structure, characteristics and working of various fibres according to different end uses like thermal protection, ballistic protection, anti microbial protection, protection against cold etc.

Yarn & fabric (knitted, woven & non-woven) parameters-their method of production- . effect of structure on their performance- use of composite materials in yarn and fabric formation used for protective end uses. Chemical finishes for protective garments:Use of coated fabrics - different type of finishes like fire retardant finishes, for different textile materials, water repellent finishes, anti microbial finishes. Chemical finishes against radiation and chemicals - Method of application of those finishes Protective finishes for health

Garment Construction:Method of construction of garments according to various protective end uses like protection against cold, ballistic protection, Use of different fabric types (knitted, woven, and nonwoven), coated/ laminated in different places. Use of interlining & composites. 3D structures. Hi-tech textiles - wearable electronics. Protective garments for industrial and apparel end uses.

Evaluation of protective fabrics

Desirable properties of protective textiles- method of testing for thermal protective performance, abrasion & wear resistance, Evaluation of resistance to mildew, ageing, sunlight, chemical, electrostatic and electrical resistivity, impact properties. ASTM standards for protective garments.

REFERENCES

1. P.W.Harrison”The Design of Textiles for Industrial Application “ the Textile institute,Manchester 1998.
- 2.Bajaj P. and Sengupta A.K “Protective Clothing”The Textile Institute 1992.
- 3.Jhonson J.S. and Mansdork S.Z, “Performance of Protective Clothing”,ASTM 1996
- 4.Corbman B.P.,”Textiles :Fibre To Fabric”,McGrawhill Book Company,1985