

ANNA UNIVERSITY, CHENNAI

AFFILIATED INSTITUTIONS

R - 2008

B. TECH. FASHION TECHNOLOGY

II - VIII SEMESTERS CURRICULUM AND SYLLABI

SEMESTER II

SL. No.	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	HS2161	Technical English – II*	3	1	0	4
2.	MA2161	Mathematics – II*	3	1	0	4
3.	PH2161	Engineering Physics – II*	3	0	0	3
4.	CY2161	Engineering Chemistry – II*	3	0	0	3
5. a	ME2151	Engineering Mechanics (For non-circuit branches)	3	1	0	4
5. b	EE2151	Circuit Theory (For branches under Electrical Faculty)	3	1	0	4
5. c	EC2151	Electric Circuits and Electron Devices (For branches under I & C Faculty)	3	1	0	4
6. a	GE2151	Basic Electrical & Electronics Engineering (For non-circuit branches)	4	0	0	4
6. b	GE2152	Basic Civil & Mechanical Engineering (For circuit branches)	4	0	0	4
PRACTICAL						
7.	GE2155	Computer Practice Laboratory-II*	0	1	2	2
8.	GS2165	Physics & Chemistry Laboratory - II*	0	0	3	2
9. a	ME2155	Computer Aided Drafting and Modeling Laboratory (For non-circuits branches)	0	1	2	2
9. b	EE2155	Electrical Circuits Laboratory (For branches under Electrical Faculty)	0	0	3	2
9. c	EC2155	Circuits and Devices Laboratory (For branches under I & C Faculty)	0	0	3	2
TOTAL : 28 CREDITS						
10.	-	English Language Laboratory ⁺	0	0	2	-

* Common to all B.E. / B.Tech. Programmes

+ Offering English Language Laboratory as an additional subject (with no marks) during 2nd semester may be decided by the respective Colleges affiliated to Anna University Chennai.

A. CIRCUIT BRANCHES

I Faculty of Electrical Engineering

1. B.E. Electrical and Electronics Engineering
2. B.E. Electronics and Instrumentation Engineering
3. B.E. Instrumentation and Control Engineering

II Faculty of Information and Communication Engineering

1. B.E. Computer Science and Engineering
2. B.E. Electronics and Communication Engineering
3. B.E. Bio Medical Engineering
4. B.Tech. Information Technology

B. NON – CIRCUIT BRANCHES

I Faculty of Civil Engineering

1. B.E. Civil Engineering

II Faculty of Mechanical Engineering

1. B.E. Aeronautical Engineering
2. B.E. Automobile Engineering
3. B.E. Marine Engineering
4. B.E. Mechanical Engineering
5. B.E. Production Engineering

III Faculty of Technology

1. B.Tech. Chemical Engineering
2. B.Tech. Biotechnology
3. B.Tech. Polymer Technology
4. B.Tech. Textile Technology
5. B.Tech. Textile Technology (Fashion Technology)
6. B.Tech. Petroleum Engineering
7. B.Tech. Plastics Technology

SEMESTER III

(Applicable to the students admitted from the Academic year 2008 – 2009 onwards)

Code. No	Course Title	L	T	P	C
Theory					
FS3201	Transforms and Partial Differential Equations	3	1	0	4
FS3202	Environmental Science And Engineering	3	0	0	3
FS3203	Mechanical Engineering	3	0	0	3
FS3204	Electrical Engineering	3	0	0	3
FS3205	Pattern Making	3	0	0	3
FS3206	Textile Science	3	0	0	3
PRACTICALS					
FS3208	Electrical Engineering Laboratory	0	0	3	2
FS3209	Mechanical Engineering Laboratory	0	0	3	2
FS3210	Pattern making and grading Laboratory	0	0	3	2
TOTAL CREDITS					25

SEMESTER – IV

(Applicable to the students admitted from the Academic year 2008 – 2009 onwards)

Code. No	Course Title	L	T	P	C
Theory					
FS3211	Probability and Statistics	3	1	0	4
FS3212	Garment Construction	3	0	0	3
FS3213	Fabric Manufacture	3	0	0	3
FS3214	Woven Fabric Structure And Design	3	0	0	3
FS3215	Garment Production Machinery And Equipments	3	0	0	3
FS3216	Dyeing, Printing And Pollution Control	3	0	0	3
PRACTICAL					
FS3218	Basic Garment Construction Laboratory	0	0	3	2
FS3219	Dyeing And Printing Laboratory	0	0	3	2
FS3220	Textile CAD And Fabric Structure Laboratory	0	0	3	2
TOTAL CREDITS					25

SEMESTER – V

(Applicable to the students admitted from the Academic year 2008 – 2009 onwards)

Code No.	Course Title	L	T	P	C
Theory					
FS3301	Total Quality Management	3	0	0	3
FS3302	Embroidery and Surface Ornamentation	3	0	0	3
FS3303	Men's and Children's Wear	3	0	0	3
FS3304	Women's Wear and Lingerie	3	0	0	3
FS3305	Clothing Care and Garment Finishing	3	0	0	3
FS3306	Testing and Quality Control of Textiles and Apparel	3	0	0	3
Practicals					
FS3308	Testing and Quality Control Laboratory	0	0	3	2
FS3309	Garment Construction Laboratory – I	0	0	3	2
FS3310	Technical Seminar	0	0	3	2
TOTAL CREDITS					24

SEMESTER – VI

Code No.	Course Title	L	T	P	C
Theory					
FS3311	Principles of Management	3	0	0	3
FS3312	Apparel Production Management	3	0	0	3
FS3313	Knitted Fabric Structure	3	0	0	3
FS3314	Quality Assurance in Apparel Production	3	0	0	3
FS3315	Clothing Size and Fit	3	0	0	3
E1*	Elective I	3	0	0	3
Practicals					
FS3317	Computer-Aided Garment Design Laboratory	0	0	3	2
FS3318	Garment Construction Laboratory – II	0	0	3	2
FS3319	Design Collection Laboratory	0	0	3	2
TOTAL CREDITS					24

SEMESTER – VII

Code No.	Course Title	L	T	P	C
Theory					
FS3401	Management of Apparel Units	3	0	0	3
FS3402	Apparel Merchandising and Marketing	3	0	0	3
FS3403	Export Documentation and Costing	3	0	0	3
FS3404	Disaster Management	3	0	0	3
E2**	Elective II	3	0	0	3
E3***	Elective III	3	0	0	3
Practical					
FS3406	Mini-Project and Design Collection Laboratory	0	0	3	2
FS3407	Apparel Machinery Laboratory	0	0	3	2
FS3408	Presentation Skills and Technical Seminar**	0	0	3	2
TOTAL CREDITS					22

SEMESTER VIII

Code No.	Course Title	L	T	P	C
Theory					
FS3409	Professional Ethics and Human Values	3	0	0	3
	Elective IV	3	0	0	3
Practical					
FS3411	Project Work - Phase II	0	0	6	3
FS3412	Comprehension**	0	1	0	
TOTAL CREDITS					9

**** No Examinations**

LIST OF ELECTIVES

Elective I

Code No.	Course Title	L	T	P	C
FS3001	Advanced Pattern Making	3	0	0	3
FS3002	CAD / CAM in Apparel Production	3	0	0	3
FS3003	Computer Applications in Apparel Industry	3	0	0	3
FS3004	Creativity, Innovation and New Product Development	3	0	0	3

Elective II

Code No.	Course Title	L	T	P	C
FS3005	Eco-Friendly Dyes and Chemicals	3	0	0	3
FS3006	Fashion Marketing	3	0	0	3
FS3007	Product Engineering and Plant Layout	3	0	0	3
FS3008	Fashion Photography	3	0	0	3

Elective III

Code No.	Course Title	L	T	P	C
FS3009	Functional Clothing	3	0	0	3
FS3010	Home Textiles	3	0	0	3
FS3011	Industrial Engineering	3	0	0	3
FS3012	Operations Research	3	0	0	3

Elective IV

Code No.	Course Title	L	T	P	C
FS3013	Retailing and Brand Management	3	0	0	3
FS3014	Logistics and Supply Chain Management	3	0	0	3
FS3015	Visual Merchandising	3	0	0	3
FS3016	Entrepreneurship Development	3	0	0	3

AIM:

To encourage students to actively involve in participative learning of English and to help them acquire Communication Skills.

OBJECTIVES:

1. To help students develop listening skills for academic and professional purposes.
2. To help students acquire the ability to speak effectively in English in real-life situations.
3. To inculcate reading habit and to develop effective reading skills.
4. To help students improve their active and passive vocabulary.
5. To familiarize students with different rhetorical functions of scientific English.
6. To enable students write letters and reports effectively in formal and business situations.

UNIT I**12**

Technical Vocabulary - meanings in context, sequencing words, Articles- Prepositions, intensive reading& predicting content, Reading and interpretation, extended definitions, Process description

SUGGESTED ACTIVITIES:

1. Exercises on word formation using the prefix 'self' - Gap filling with preposition.
2. Exercises - Using sequence words.
3. Reading comprehension exercise with questions based on inference – Reading headings and predicting the content – Reading advertisements and interpretation.
4. Writing extended definitions – Writing descriptions of processes – Writing paragraphs based on discussions – Writing paragraphs describing the future.

UNIT II**12**

Phrases / Structures indicating use / purpose – Adverbs-Skimming – Non-verbal communication - Listening – correlating verbal and non-verbal communication -Speaking in group discussions – Formal Letter writing – Writing analytical paragraphs.

SUGGESTED ACTIVITIES:

Reading comprehension exercises with questions on overall content – Discussions analyzing stylistic features (creative and factual description) - Reading comprehension exercises with texts including graphic communication - Exercises in interpreting non-verbal communication.

1. Listening comprehension exercises to categorise data in tables.
2. Writing formal letters, quotations, clarification, complaint – Letter seeking permission for Industrial visits– Writing analytical paragraphs on different debatable issues.

UNIT III**12**

Cause and effect expressions – Different grammatical forms of the same word - Speaking – stress and intonation, Group Discussions - Reading – Critical reading - Listening, - Writing – using connectives, report writing – types, structure, data collection, content, form, recommendations .

SUGGESTED ACTIVITIES:

Exercises combining sentences using cause and effect expressions – Gap filling exercises using the appropriate tense forms – Making sentences using different grammatical forms of the same word. (Eg: object –verb / object – noun)

1. Speaking exercises involving the use of stress and intonation – Group discussions– analysis of problems and offering solutions.
2. Reading comprehension exercises with critical questions, Multiple choice question.
3. Sequencing of jumbled sentences using connectives – Writing different types of reports like industrial accident report and survey report – Writing recommendations.

UNIT IV**12**

Numerical adjectives – Oral instructions – Descriptive writing – Argumentative paragraphs – Letter of application - content, format (CV / Bio-data) - Instructions, imperative forms - Checklists, Yes/No question form – E-mail communication.

SUGGESTED ACTIVITIES:

1. Rewriting exercises using numerical adjectives.
2. Reading comprehension exercises with analytical questions on content – Evaluation of content.
3. Listening comprehension – entering information in tabular form, intensive listening exercise and completing the steps of a process.
4. Speaking - Role play – group discussions – Activities giving oral instructions.
5. Writing descriptions, expanding hints – Writing argumentative paragraphs – Writing formal letters – Writing letter of application with CV/Bio-data – Writing general and safety instructions – Preparing checklists – Writing e-mail messages.

UNIT V**9**

Speaking - Discussion of Problems and solutions - Creative and critical thinking – Writing an essay, Writing a proposal.

SUGGESTED ACTIVITIES:

1. Case Studies on problems and solutions
2. Brain storming and discussion
3. Writing Critical essays
4. Writing short proposals of 2 pages for starting a project, solving problems, etc.
5. Writing advertisements.

TOTAL : 60 PERIODS**TEXT BOOKS:**

1. Chapters 5 – 8. Department of Humanities & Social Sciences, Anna University, 'English for Engineers and Technologists' Combined Edition (Volumes 1 & 2), Chennai: Orient Longman Pvt. Ltd., 2006. Themes 5 – 8 (Technology, Communication, Environment, Industry)

REFERENCES:

1. P. K. Dutt, G. Rajeevan and C.L.N Prakash, 'A Course in Communication Skills', Cambridge University Press, India 2007.
2. Krishna Mohan and Meera Banerjee, 'Developing Communication Skills', Macmillan India Ltd., (Reprinted 1994 – 2007).
3. Edgar Thorpe, Showick Thorpe, 'Objective English', Second Edition, Pearson Education, 2007.

EXTENSIVE READING:

1. Robin Sharma, 'The Monk Who Sold His Ferrari', Jaico Publishing House, 2007

Note:

The book listed under Extensive Reading is meant for inculcating the reading habit of the students. They need not be used for testing purposes.

MA2161**MATHEMATICS – II****L T P C
3 1 0 4****UNIT I ORDINARY DIFFERENTIAL EQUATIONS****12**

Higher order linear differential equations with constant coefficients – Method of variation of parameters – Cauchy's and Legendre's linear equations – Simultaneous first order linear equations with constant coefficients.

UNIT II VECTOR CALCULUS**12**

Gradient Divergence and Curl – Directional derivative – Irrotational and solenoidal vector fields – Vector integration – Green's theorem in a plane, Gauss divergence theorem and Stokes' theorem (excluding proofs) – Simple applications involving cubes and rectangular parallelepipeds.

UNIT III ANALYTIC FUNCTIONS**12**

Functions of a complex variable – Analytic functions – Necessary conditions, Cauchy – Riemann equation and Sufficient conditions (excluding proofs) – Harmonic and orthogonal properties of analytic function – Harmonic conjugate – Construction of analytic functions – Conformal mapping : $w = z+c$, cz , $1/z$, and bilinear transformation.

UNIT IV COMPLEX INTEGRATION**12**

Complex integration – Statement and applications of Cauchy's integral theorem and Cauchy's integral formula – Taylor and Laurent expansions – Singular points – Residues – Residue theorem – Application of residue theorem to evaluate real integrals – Unit circle and semi-circular contour(excluding poles on boundaries).

UNIT V LAPLACE TRANSFORM**12**

Laplace transform – Conditions for existence – Transform of elementary functions – Basic properties – Transform of derivatives and integrals – Transform of unit step function and impulse functions – Transform of periodic functions.

Definition of Inverse Laplace transform as contour integral – Convolution theorem (excluding proof) – Initial and Final value theorems – Solution of linear ODE of second order with constant coefficients using Laplace transformation techniques.

TOTAL : 60 PERIODS

TEXT BOOKS:

1. Bali N. P and Manish Goyal, "Text book of Engineering Mathematics", 3rd Edition, Laxmi Publications (p) Ltd., (2008).
2. Grewal. B.S, "Higher Engineering Mathematics", 40th Edition, Khanna Publications, Delhi, (2007).

REFERENCES:

1. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, New Delhi, (2007).
2. Glyn James, "Advanced Engineering Mathematics", 3rd Edition, Pearson Education, (2007).
3. Erwin Kreyszig, "Advanced Engineering Mathematics", 7th Edition, Wiley India, (2007).
4. Jain R.K and Iyengar S.R.K, "Advanced Engineering Mathematics", 3rd Edition, Narosa Publishing House Pvt. Ltd., (2007).

PH2161**ENGINEERING PHYSICS – II****L T P C
3 0 0 3****UNIT I CONDUCTING MATERIALS****9**

Conductors – classical free electron theory of metals – Electrical and thermal conductivity – Wiedemann – Franz law – Lorentz number – Draw backs of classical theory – Quantum theory – Fermi distribution function – Effect of temperature on Fermi Function – Density of energy states – carrier concentration in metals.

UNIT II SEMICONDUCTING MATERIALS**9**

Intrinsic semiconductor – carrier concentration derivation – Fermi level – Variation of Fermi level with temperature – electrical conductivity – band gap determination – extrinsic semiconductors – carrier concentration derivation in n-type and p-type semiconductor – variation of Fermi level with temperature and impurity concentration – compound semiconductors – Hall effect – Determination of Hall coefficient – Applications.

UNIT III MAGNETIC AND SUPERCONDUCTING MATERIALS**9**

Origin of magnetic moment – Bohr magneton – Dia and para magnetism – Ferro magnetism – Domain theory – Hysteresis – soft and hard magnetic materials – anti – ferromagnetic materials – Ferrites – applications – magnetic recording and readout – storage of magnetic data – tapes, floppy and magnetic disc drives.

Superconductivity : properties - Types of super conductors – BCS theory of superconductivity(Qualitative) - High T_c superconductors – Applications of superconductors – SQUID, cryotron, magnetic levitation.

UNIT IV DIELECTRIC MATERIALS**9**

Electrical susceptibility – dielectric constant – electronic, ionic, orientational and space charge polarization – frequency and temperature dependence of polarisation – internal field – Claussius – Mosotti relation (derivation) – dielectric loss – dielectric breakdown – uses of dielectric materials (capacitor and transformer) – ferroelectricity and applications.

UNIT V MODERN ENGINEERING MATERIALS

9

Metallic glasses: preparation, properties and applications.

Shape memory alloys (SMA): Characteristics, properties of NiTi alloy, application, advantages and disadvantages of SMA

Nanomaterials: synthesis –plasma arcing – chemical vapour deposition – sol-gels – electrodeposition – ball milling - properties of nanoparticles and applications.

Carbon nanotubes: fabrication – arc method – pulsed laser deposition – chemical vapour deposition - structure – properties and applications.

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Charles Kittel ' Introduction to Solid State Physics', John Wiley & sons, 7th edition, Singapore (2007)
2. Charles P. Poole and Frank J.Owren, 'Introduction to Nanotechnology', Wiley India(2007) (for Unit V)

REFERENCES:

1. Rajendran, V, and Marikani A, 'Materials science'Tata McGraw Hill publications, (2004) New Delhi.
2. Jayakumar, S. 'Materials science', R.K. Publishers, Coimbatore, (2008).
3. Palanisamy P.K, 'Materials science', Scitech publications(India) Pvt. LTd., Chennai, second Edition(2007)
4. M. Arumugam, 'Materials Science' Anuradha publications, Kumbakonam, (2006)

CY2161

ENGINEERING CHEMISTRY – II

**L T P C
3 0 0 3**

AIM

To impart a sound knowledge on the principles of chemistry involving the different application oriented topics required for all engineering branches.

OBJECTIVES

- The student should be conversant with the principles electrochemistry, electrochemical cells, emf and applications of emf measurements.
- Principles of corrosion control
- Chemistry of Fuels and combustion
- Industrial importance of Phase rule and alloys
- Analytical techniques and their importance.

UNIT I ELECTROCHEMISTRY

9

Electrochemical cells – reversible and irreversible cells – EMF – measurement of emf – Single electrode potential – Nernst equation (problem) – reference electrodes –Standard Hydrogen electrode -Calomel electrode – Ion selective electrode – glass electrode and measurement of pH – electrochemical series – significance – potentiometer titrations (redox - Fe^{2+} vs dichromate and precipitation – Ag^+ vs Cl^- titrations) and conduct metric titrations (acid-base – HCl vs, NaOH) titrations,

UNIT II CORROSION AND CORROSION CONTROL 9

Chemical corrosion – Pilling – Bedworth rule – electrochemical corrosion – different types – galvanic corrosion – differential aeration corrosion – factors influencing corrosion – corrosion control – sacrificial anode and impressed cathodic current methods – corrosion inhibitors – protective coatings – paints – constituents and functions – metallic coatings – electroplating (Au) and electroless (Ni) plating.

UNIT III FUELS AND COMBUSTION 9

Calorific value – classification – Coal – proximate and ultimate analysis metallurgical coke – manufacture by Otto-Hoffmann method – Petroleum processing and fractions – cracking – catalytic cracking and methods-knocking – octane number and cetane number – synthetic petrol – Fischer Tropsch and Bergius processes – Gaseous fuels- water gas, producer gas, CNG and LPG, Flue gas analysis – Orsat apparatus – theoretical air for combustion.

UNIT IV PHASE RULE AND ALLOYS 9

Statement and explanation of terms involved – one component system – water system – condensed phase rule – construction of phase diagram by thermal analysis – simple eutectic systems (lead-silver system only) – alloys – importance, ferrous alloys – nichrome and stainless steel – heat treatment of steel, non-ferrous alloys – brass and bronze.

UNIT V ANALYTICAL TECHNIQUES 9

Beer-Lambert's law (problem) – UV-visible spectroscopy and IR spectroscopy – principles – instrumentation (problem) (block diagram only) – estimation of iron by colorimetry – flame photometry – principle – instrumentation (block diagram only) – estimation of sodium by flame photometry – atomic absorption spectroscopy – principles – instrumentation (block diagram only) – estimation of nickel by atomic absorption spectroscopy.

TOTAL: 45 PERIODS

TEXT BOOKS:

1. P.C.Jain and Monica Jain, "Engineering Chemistry" Dhanpat Rai Pub, Co., New Delhi (2002).
2. S.S.Dara "A text book of Engineering Chemistry" S.Chand & Co.Ltd., New Delhi (2006).

REFERENCES:

1. B.Sivasankar "Engineering Chemistry" Tata McGraw-Hill Pub.Co.Ltd, New Delhi (2008).
2. B.K.Sharma "Engineering Chemistry" Krishna Prakasan Media (P) Ltd., Meerut (2001).

ME2151

ENGINEERING MECHANICS

**L T P C
3 1 0 4**

OBJECTIVE

At the end of this course the student should be able to understand the vectorial and scalar representation of forces and moments, static equilibrium of particles and rigid bodies both in two dimensions and also in three dimensions. Further, he should understand the principle of work and energy. He should be able to comprehend the effect of friction on equilibrium. He should be able to understand the laws of motion, the kinematics of motion and the interrelationship. He should also be able to write the dynamic equilibrium equation. All these should be achieved both conceptually and through solved examples.

UNIT I ELECTRICAL CIRCUITS & MEASUREMENTS 12

Ohm's Law – Kirchoff's Laws – Steady State Solution of DC Circuits – Introduction to AC Circuits – Waveforms and RMS Value – Power and Power factor – Single Phase and Three Phase Balanced Circuits.

Operating Principles of Moving Coil and Moving Iron Instruments (Ammeters and Voltmeters), Dynamometer type Watt meters and Energy meters.

UNIT II ELECTRICAL MECHANICS 12

Construction, Principle of Operation, Basic Equations and Applications of DC Generators, DC Motors, Single Phase Transformer, single phase induction Motor.

UNIT III SEMICONDUCTOR DEVICES AND APPLICATIONS 12

Characteristics of PN Junction Diode – Zener Effect – Zener Diode and its Characteristics – Half wave and Full wave Rectifiers – Voltage Regulation.

Bipolar Junction Transistor – CB, CE, CC Configurations and Characteristics – Elementary Treatment of Small Signal Amplifier.

UNIT IV DIGITAL ELECTRONICS 12

Binary Number System – Logic Gates – Boolean Algebra – Half and Full Adders – Flip-Flops – Registers and Counters – A/D and D/A Conversion (single concepts)

UNIT V FUNDAMENTALS OF COMMUNICATION ENGINEERING 12

Types of Signals: Analog and Digital Signals – Modulation and Demodulation: Principles of Amplitude and Frequency Modulations.

Communication Systems: Radio, TV, Fax, Microwave, Satellite and Optical Fibre (Block Diagram Approach only).

TOTAL : 60 PERIODS

TEXT BOOKS:

1. N. Mittle "Basic Electrical Engineering", Tata McGraw Hill Edition, New Delhi, 1990.
2. R.S. Sedha, "Applied Electronics" S. Chand & Co., 2006.

REFERENCES:

1. Muthusubramanian R, Salivahanan S and Muraleedharan K A, "Basic Electrical, Electronics and Computer Engineering", Tata McGraw Hill, Second Edition, (2006).
2. Nagsarkar T K and Sukhija M S, "Basics of Electrical Engineering", Oxford press (2005).
3. Mehta V K, "Principles of Electronics", S.Chand & Company Ltd, (1994).
4. Mahmood Nahvi and Joseph A. Edminister, "Electric Circuits", Schaum' Outline Series, McGraw Hill, (2002).
5. Premkumar N, "Basic Electrical Engineering", Anuradha Publishers, (2003).

GE2155

COMPUTER PRACTICE LABORATORY – II
LIST OF EXPERIMENTS

L T P C
0 1 2 2

1. UNIX COMMANDS	15
Study of Unix OS - Basic Shell Commands - Unix Editor	
2. SHELL PROGRAMMING	15
Simple Shell program - Conditional Statements - Testing and Loops	
3. C PROGRAMMING ON UNIX	15
Dynamic Storage Allocation-Pointers-Functions-File Handling	

TOTAL : 45 PERIODS

HARDWARE / SOFTWARE REQUIREMENTS FOR A BATCH OF 30 STUDENTS

HARDWARE

1 UNIX Clone Server
33 Nodes (thin client or PCs)
Printer – 3 Nos.

SOFTWARE

. OS – UNIX Clone (33 user license or License free Linux)
. Compiler - C

GS2165

PHYSICS LABORATORY – II

L T P C
0 0 3 2

LIST OF EXPERIMENTS

1. Determination of Young's modulus of the material – non uniform bending.
2. Determination of Band Gap of a semiconductor material.
3. Determination of specific resistance of a given coil of wire – Carey Foster Bridge.
4. Determination of viscosity of liquid – Poiseuille's method.
5. Spectrometer dispersive power of a prism.
6. Determination of Young's modulus of the material – uniform bending.
7. Torsional pendulum – Determination of rigidity modulus.
 - A minimum of FIVE experiments shall be offered.
 - Laboratory classes on alternate weeks for Physics and Chemistry.
 - The lab examinations will be held only in the second semester.

LIST OF EXPERIMENTS

1. Conduct metric titration (Simple acid base)
2. Conduct metric titration (Mixture of weak and strong acids)
3. Conduct metric titration using BaCl_2 vs Na_2SO_4
4. Potentiometric Titration (Fe^{2+} / KMnO_4 or $\text{K}_2\text{Cr}_2\text{O}_7$)
5. PH titration (acid & base)
6. Determination of water of crystallization of a crystalline salt (Copper sulphate)
7. Estimation of Ferric iron by spectrophotometry.

- A minimum of FIVE experiments shall be offered.
- Laboratory classes on alternate weeks for Physics and Chemistry.
- The lab examinations will be held only in the second semester.

LIST OF EXERCISES USING SOFTWARE CAPABLE OF DRAFTING AND MODELING

1. Study of capabilities of software for Drafting and Modeling – Coordinate systems (absolute, relative, polar, etc.) – Creation of simple figures like polygon and general multi-line figures.
2. Drawing of a Title Block with necessary text and projection symbol.
3. Drawing of curves like parabola, spiral, involute using Bspline or cubic spline.
4. Drawing of front view and top view of simple solids like prism, pyramid, cylinder, cone, etc, and dimensioning.
5. Drawing front view, top view and side view of objects from the given pictorial views (eg. V-block, Base of a mixie, Simple stool, Objects with hole and curves).
6. Drawing of a plan of residential building (Two bed rooms, kitchen, hall, etc.)
7. Drawing of a simple steel truss.
8. Drawing sectional views of prism, pyramid, cylinder, cone, etc,
9. Drawing isometric projection of simple objects.
10. Creation of 3-D models of simple objects and obtaining 2-D multi-view drawings from 3-D model.

NOTE: PLOTTING OF DRAWINGS MUST BE MADE FOR EACH EXERCISE AND ATTACHED TO THE RECORDS WRITTEN BY STUDENTS.

LIST OF EQUIPMENTS FOR A BATCH OF 30 STUDENTS:

1. Pentium IV computer or better hardware, with suitable graphics facility - 30 No.
2. Licensed software for Drafting and Modeling. – 30 Licenses
3. Laser Printer or Plotter to print / plot drawings – 2 No.

LIST OF EXPERIMENTS

1. Verification of ohm's laws and kirchoff's laws.
2. Verification of Thevemin's and Norton's Theorem
3. Verification of superposition Theorem
4. Verification of maximum power transfer theorem.
5. Verification of reciprocity theorem
6. Measurement of self inductance of a coil
7. Verification of mesh and nodal analysis.
8. Transient response of RL and RC circuits for DC input.
9. Frequency response of series and parallel resonance circuits.
10. Frequency response of single tuned coupled circuits.

TOTAL: 45 PERIODS

1. Verification of KVL and KCL
2. Verification of Thevenin and Norton Theorems.
3. Verification of superposition Theorem.
4. Verification of Maximum power transfer and reciprocity theorems.
5. Frequency response of series and parallel resonance circuits.
6. Characteristics of PN and Zener diode
7. Characteristics of CE configuration
8. Characteristics of CB configuration
9. Characteristics of UJT and SCR
10. Characteristics of JFET and MOSFET
11. Characteristics of Diac and Triac.
12. Characteristics of Photodiode and Phototransistor.

TOTAL : 45 PERIODS**1. LISTENING:****5**

Listening & answering questions – gap filling – Listening and Note taking- Listening to telephone conversations

2. SPEAKING:**5**

Pronouncing words & sentences correctly – word stress – Conversation practice.

CLASSROOM SESSION**20**

1. Speaking: Introducing oneself, Introducing others, Role play, Debate -Presentations:
Body language, gestures, postures.
Group Discussions etc
2. Goal setting – interviews – stress time management – situational reasons

EVALUATION

(1) Lab Session – 40 marks

- Listening – 10 marks
- Speaking – 10 marks
- Reading – 10 marks
- Writing – 10 marks

(2) Classroom Session – 60 marks

- Role play activities giving real life context – 30 marks
- Presentation – 30 marks

NOTE ON EVALUATION

1. Examples for role play situations:

- a. Marketing engineer convincing a customer to buy his product.
- b. Telephone conversation – Fixing an official appointment / Enquiry on availability of flight or train tickets / placing an order. etc.

2. Presentations could be just a Minute (JAM activity) or an Extempore on simple topics or visuals could be provided and students could be asked to talk about it.

REFERENCES:

1. Hartley, Peter, Group Communication, London: Routledge, (2004).
2. Doff, Adrian and Christopher Jones, Language in Use – (Intermediate level), Cambridge University Press, (1994).
3. Gammidge, Mick, Speaking Extra – A resource book of multi-level skills activities , Cambridge University Press, (2004).
4. Craven, Miles, Listening Extra - A resource book of multi-level skills activities, Cambridge, Cambridge University Press, (2004).
5. Naterop, Jean & Rod Revell, Telephoning in English, Cambridge University Press, (1987).

LAB REQUIREMENTS

1. Teacher – Console and systems for students
2. English Language Lab Software
3. Tape Recorders.

FS3201	TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	L	T	P	C
	(Common to all branches of BE / B.Tech Programmes)	3	1	0	4

OBJECTIVES

The course objective is to develop the skills of the students in the areas of Transforms and Partial Differential Equations. This will be necessary for their effective studies in a large number of engineering subjects like heat conduction, communication systems, electro-optics and electromagnetic theory. The course will also serve as a prerequisite for post graduate and specialized studies and research.

UNIT I INTRODUCTION TO ENVIRONMENTAL STUDIES AND NATURAL RESOURCES 10

Definition, scope and importance – need for public awareness – forest resources: use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their ground water, floods, drought, conflicts over water, dams-benefits and problems – mineral resources: use effects on forests and tribal people – water resources: use and over-utilization of surface and exploitation, environmental effects of extracting and using mineral resources, case studies – food resources: world food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – energy resources: growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies – land resources: land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – equitable use of resources for sustainable lifestyles. Field study of local area to document environmental assets – river / forest / grassland /hill / mountain.

UNIT II ECOSYSTEMS AND BIODIVERSITY 14

Concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers – energy flow in the ecosystem – ecological succession – food chains, food webs and ecological pyramids – introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – introduction to biodiversity – definition: genetic, species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: in-situ and ex-situ conservation of biodiversity. Field study of common plants, insects, birds
Field study of simple ecosystems – pond, river, hill slopes, etc.

UNIT III ENVIRONMENTAL POLLUTION 8

Definition – causes, effects and control measures of: (a) air pollution (b) water pollution (c) soil pollution (d) marine pollution (e) noise pollution (f) thermal pollution (g) nuclear hazards – solid waste management: causes, effects and control measures of urban and industrial wastes – role of an individual in prevention of pollution – pollution case studies – disaster management: floods, earthquake, cyclone and landslides. Field study of local polluted site – urban / rural / industrial / agricultural

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT 7

From unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management – resettlement and rehabilitation of people; its problems and concerns, case studies – environmental ethics: issues and possible solutions – climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. – wasteland reclamation – consumerism and waste products – environment production act – air (prevention and control of pollution) act – water (prevention and control of pollution) act – wildlife protection act – forest conservation act – issues involved in enforcement of environmental legislation – public awareness

UNIT V HUMAN POPULATION AND THE ENVIRONMENT**6**

Population growth, variation among nations – population explosion – family welfare programme – environment and human health – human rights – value education – HIV / AIDS – women and child welfare – role of information technology in environment and human health – case studies.

TOTAL : 45 PERIODS**TEXT BOOKS**

1. Gilbert M.Masters, "Introduction to Environmental Engineering and Science", Pearson Education Pvt., Ltd., Second Edition, ISBN 81-297-0277-0, 2004.
2. Miller T.G. Jr., "Environmental Science", Wadsworth Publishing Co.

REFERENCES

1. Bharucha Erach, "The Biodiversity of India", Mapin Publishing Pvt. Ltd., Ahmedabad India.
2. Trivedi R.K., "Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards", Vol. I and II, Enviro Media.
3. Cunningham, W.P.Cooper, T.H.Gorhani, "Environmental Encyclopedia", Jaico Publ., House, Mumbai, 2001.
4. Wager K.D. "Environmental Management", W.B. Saunders Co., Philadelphia, USA, 1998.
5. Townsend C., Harper J and Michael Begon, "Essentials of Ecology", Blackwell Science.
6. Trivedi R.K. and P.K. Goel, "Introduction to Air Pollution", Techno-Science Publications.

FS3203**MECHANICAL ENGINEERING****L T P C**

(Common to Fashion Technology & Textile Technology)

3 0 0 3**AIM**

To introduce the Mechanical Engineering Fundamentals to the Petroleum Engineering Students.

OBJECTIVES

Students gain knowledge in the application of Mechanical and thermodynamics principles in the design and operation of Equipments and Machineries of Petroleum Industries.

UNIT I LAWS OF THERMODYNAMICS**10**

Basic concepts and hints; Zeroth law; First Law of Thermodynamics – Statement and application; Steady flow energy equation; Second law of Thermodynamics—Statement; Limitations Heat Engine; Heat Pump, Available energy, Kelvin—Planck statement and Clausius statement; Equivalence entropy; Reversibility: Entropy charts; Third law of Thermodynamics—Statement.

UNIT II HEATING AND EXPANSION OF GASES**5**

Expressions for; work done; Internal energy, Hyperbolic and polytropic processes; Free expansion and Throttling.

UNIT III AIR STANDARD EFFICIENCY**5**

Carnot cycle; Stirlings Cycle: Joule Cycle; Otto Cycle; Diesel Cycle; Dual combustion Cycle.

UNIT IV	I.C. ENGINES	4
Engine nomenclature and classifications; SI Engine: CI Engine; Four Stroke cycle?; Two stroke cycle; Performance of I.C. Engine; Brake thermal efficiency; Indicated Thermal Efficiency, Specific fuel consumption.		
UNIT V	STEAM AND ITS PROPERTIES	4
Properties of steam; Dryness fraction; latent heat; Total heat of wet steam; Superheated steam. Use of steam tables; volume of wet steam; Volume of superheated steam; External work of evaporation; Internal energy; Entropy of vapour, Expansion of vapour, Rankine cycle; Modified Rankine cycle.		
UNIT VI	STEAM ENGINES AND TURBINES	3
Hypothetical indicator diagram of steam engine; Working of a simple steam engine; steam turbines—Impulse and Reaction types—Principles of operation.		
UNIT VII	SIMPLE MECHANISM	3
Kinematic Link, Kinematic Pair Kinematic Chain; Slider Crank mechanism and inversions; Double slider crank mechanism and inversions.		
UNIT VIII	FLY WHEEL	4
Turning moment Diagram; Fluctuation of Energy; Design of fly wheel.		
UNIT IX	DRIVES	5
Belt and rope drives; Velocity ratio; slip; Ratio of tensions; Length of belt; Maximum HP; simple compound and Epicyclic gear trains.		
UNIT X	BALANCING	2
Balancing of rotating masses in same plane; Balancing of masses rotating in different planes.		

TOTAL : 45 PERIODS

TEXT BOOKS

1. Smith, "Chemical Thermodynamics", Reinhold Publishing Co., 1977.
2. Bhaskaran, K.A., and Venkatesh, A., "Engineering Thermodynamics", Tata McGraw-Hill, 1973.

REFERENCES

1. A.Pandya and Shah, "Theory of Machines", Charatakar Publisheres, 1975.
2. NAG, P.E., "Engineering Thermodynamics", II Edition, Tata McGraw-Hill Publishing Co., Ltd., 1995.

FS3204	ELECTRICAL ENGINEERING	L	T	P	C
	(Common to Fashion Technology & Textile Technology)	3	0	0	3

AIM

To introduce the principles of Electrical Engineering and the concepts of DC and AC machines.

OBJECTIVES

After the completion of this course, Students gain knowledge in fundamentals of Electrical Engineering and the operational and design aspects of DC and AC motors and drives.

UNIT I

9

SI units law, series, and parallel circuits, Kirchhoffs laws, Mechanical, Star-delta transformation – magnetic circuits – force on a current carrying conductor – electromagnetic induction, Faraday's Law, Lenz's law – effects of hysteresis & eddy currents – Self and mutual inductances.

UNIT II

9

Generation of an alternating emf – average and rms values of alternating quantity – representation of alternating quantities by phasors – single phase circuits – resonance – three phase balanced systems – single and three phase power calculations.

UNIT III

9

Principle of operation of DC machines - emf equation – types of generators –Magnetization and Load characteristics of DC generators – types and characteristics of DC motors – torque equation – DC motor starters (three point) – Efficiency calculation and Swinburne's test O Speed control.

UNIT IV

9

Construction and principle of operation of single phase transformer – emf equation O.C. & S.C. tests – efficiency and regulation – 3F Transformers, Transmission and distribution – principle and operation of three phase induction motors – types – slip torque characteristics – principle and operation of alternators – O.C. & S.C. tests – regulations by synchronous impedance method.

UNIT V

9

Basic principles of indicating instruments – moving coil and moving iron instruments – dynamometer type wattmeters – induction types energy meter – measurement of single and three phase power.

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Electrical Engineering Fundamentals / Del Toro 2nd Edition / Prentice Hall Publishers.
2. Fundamental of Electrical Engineering / Ashfaq Husain, 2nd edition / Dhanpat Rai & Co.

REFERENCES:

1. Electrical technology – Edward Hughes.
2. Introduction to electrical Engineering – Naidu & Kamakshaiah
3. Electrical Technology – Vincent Del toro
4. Theory and Problems of Basic Electrical Engineering / D.P.Kothari & I.J. Nagrath, PHI Publishers, 1998.
5. Basic Electrical Engineering / V.N.Mittle / TMH 1998.

AIM

To impart knowledge on human body measurement and creation of pattern for costumes.

OBJECTIVES

- To teach the students the science of measuring human sizes and creating a pattern from the measurements.
- To develop commercial pattern and grading of various sizes from the basic pattern

UNIT I BASIC PATTERN MAKING 9

Measurement Taking – Size chart and Measuring of Sizes. Definition of various garments parts & positions. Methods : Bespoke method & Industrial method (Using Blocks) – Basic block construction – Block preparation & correction.

UNIT II DRAFTING 9

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

UNIT III DRAFTING OF SLEEVE & COLLAR 9

Construction of sleeve block – crown height and its relationship with the fit of garment.Introduction to silhouettes of sleeves. Sleeve variation – cap, regular shirt sleeve,Bishop, Leg's o mutton, Puff sleeve. Cuffs & sleeves opening, sleeve plackets. Collars:Set-in collars and collar variations – band collars, peter pan, sailor, gents shirt collar – One piece and two piece collar, convertible collar.

UNIT IV DART MANIPULATION 9

Pattern making by manipulation of dart – and advance dart manipulation. Manipulation as seen through existing suppressions points (Bust points), away from suppression points, as gathers or tucks, as multiple darts. Methods: Slash & Spread, Pivot, difference between permanent pattern (Draft) Working patterns & Production patterns. Importance of drill hole marks in the darts; seam allowances and its importance Importance of notches: Balances marks & grain lines.

UNIT V GRADING 9

Principles of Grading – Master and Basic Grades – Basic Back Grades, Basic Front Grading, Basic Sleeve Grading, Basic Collar Grading, Basic Facing Grading. Trousers Grading, Jacket Grading, Shirt Grading, Grading Men's Waist Coat – Size Chart. Displacement of Bust Dart to Waist line – Side seam, arm hole – Neck arc Front edge, Women's Sizing Chart, Selecting a Grading System, Multi Track Grading. A Simplified System.

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Gerry Cooklin "Introduction to Clothing Manufacture", Blackwell Scientific Publications SP 1990.
2. Gerry Cooklin "Master Patterns & Grading for Women's Outsize", Blackwell Scientific Publications (1995) ISBN: 0 – 632- 03915 – 9.

REFERENCES:

1. Gerry Cooklin "Master Patterns & Grading for Men's Outsize", Blackwell Scientific Publications 1992.
2. Gillian Holman - Pattern Cutting Made Easy, Blackwell Scientific Publications 1997. ISBN: 0-7134 – 8093- 9.
3. Natalie Bray "More Dress Pattern Designing" Blackwell Scientific Publications 1986 ISBN: 0-632-01883- 6.

FS3206	TEXTILE SCIENCE	L	T	P	C
		3	0	0	3

AIM

To impart Knowledge on Textile Fibre Science.

OBJECTIVES

The students should acquire Knowledge on Cultivation, Production. Physical & Chemical Properties and Identification methods of natural and synthetic fibres.

UNIT I 9

Definitions – Fibre, Textile fibre, Staple, Filament, Yarn, Thread. Properties of Textile Fibre – Physical, chemical Biological, Thermal properties – Classification of Textile Fibers – Definition – Moisture Regain, Moisture Content, Absolute Humidity, Relative Humidity.

UNIT II 9

Production & Cultivation of Natural Fibers, Cotton, Silk, Wool, Jute.

UNIT III 9

Production sequence of Man Made Fibers: Viscose Rayon, Acetate Rayon, Cuprammonium Rayon – Production Sequence of Synthetic Fibers: Polyester, Nylon, Acrylic.

UNIT IV 9

Production Sequence of Specialty fibers: Elastometric Fibers – Production Sequence of Inorganic Fibers : Glass Fibre, Metallic Fibre. Physical and Chemical Properties.

UNIT V 9

Identification of Textile Fibers – Microscope Test Chemical Test, Burning Test, Feeling Test & Breaking Test.

TOTAL : 45 PERIODS

TEXT BOOK

1. H.V.Srinivasa moorthy, "Introduction to Textile Fibres", The Textile Association India, 1993.
2. Fibre to Fabric By Corbman.

REFERENCES

1. Advances in Fibre Science " The Textile Institute, UK 1992 Mukhopadhyay S.K.

FS3208	ELECTRICAL ENGINEERING LABORATORY	L	T	P	C
	(Common to Fashion Technology & Textile Technology)	0	0	3	2

AIM

To introduce the Electrical Engineering and the concepts of DC and AC machines

OBJECTIVES

After the completion of this course, students, gain knowledge in fundamentals of Electrical Engineering and the operational and design aspects of DC and AC motors and drives.

LIST OF EXPERIMENTS

1. Open circuit characteristics of D.C. shunt generator.
2. Load characteristics of D.C. shunt generator
3. Load characteristics of D.C. compound generator
4. Load test on D.C. shunt motor
5. Study of D.C. motor starters
6. O.C. and S.C. tests on single phase transformer
7. Load test on single phase transformer
8. Load test on 3 - phase squirrel cage induction motor
9. Study of 3 - phase induction motor starters
10. Load test on 3 - phase slip ring induction motor
11. O.C. and S.C. tests on 3 - phase alternator
12. Synchronization and V-curves of alternator

TOTAL : 45 PERIODS

LIST OF EQUIPMENTS

1. D.C. shunt generator.
2. D.C. shunt generator
3. Compound generator
4. D.C. shunt motor
5. D.C. motor starters
6. Single phase transformer
7. 3 - phase squirrel cage induction motor
8. 3 - phase induction motor starters
9. 3 - phase slip ring induction motor
10. 3 - phase alternator
11. Alternator

FS3209	MECHANICAL ENGINEERING LABORATORY	L	T	P	C
	(Common to Fashion Technology & Textile Technology)	0	0	3	2

AIM

To introduce the Mechanical Engineering fundamentals to the petroleum engineering students.

OBJECTIVES

Students gain knowledge in the applications of Mechanical and Thermodynamics principles in the design and operation of equipments and machineries of petroleum industries.

LIST OF EXPERIMENTS

1. Heat balance test on Diesel engine
2. Mechanical load test on petrol engine
3. Morse test on multi cyliner petrol engine
4. volumetric efficiency on Diesel engine
5. Volumetric efficiency on two state reciprocating compressor
6. COP in compression refrigeration cycle
7. Test on Air conditioning system
8. Viscosity Index, Flash and Fire point of Lubricant
9. Valve timing diagram in Diesel engine
10. Port timing diagram

LIST OF EQUIPMENTS

1. Diesel Alternator Set
2. Diesel Engines
3. Petrol Engines
4. Multi Cylinder Petrol engine
5. Two stroke Reciprocating Compressor
6. Compression Refrigeration Cycle
7. Air Conditioning System
8. Viscosity, Flash and Fire point apparatus
9. Stream power plant
10. Two stroke engines
11. Bomb calorimeter
12. Orsat apparatus
13. Gas calorimeter

TOTAL : 60 PERIODS

FS3210	PATTERN MAKING AND GRADING LABORATORY	L	T	P	C
		0	0	3	2

AIM

To impart knowledge on human body measurement creation of pattern for costumes.

OBJECTIVES

- To teach the students science of measuring human sizes and creating a pattern from the measurements.
- To develop commercial pattern and grading of various sizes from the base pattern.

1. Developing pattern & Grading for Children's wear

- Baba suit
- Rompers
- Round neck T-Shirt
- Baby frock

2. Developing pattern & Grading for Ladies wear

- Salwar Kameez
- Blouses
- Skirt & Top
- Brassier & Panties
- Nighty

3. Developing Pattern & Grading for Men's Wear

- Men's Shorts
- Men's Formal Shirt
- Men's Formal Trousers
- Jeans

Pattern Making and Grading Lab

Requirements of Equipments (for a batch of 30 students)

1. Cork Top Tables : 15

2. Dummies

Male :	38" Chest half	-1
Male :	42" chest full	-1
Male :	44" chest Half	-1
Male :	44" chest full with hand	-1
Female :	32.5" bust half	-1
Female :	34.5" bust full	-1
Female :	36.5" bust half	-1
Female :	36.5" bust full with hand	-1
Female :	half – 85 cm Half	-1

3. Mannequins

i. Babbies

Girl - 77.8 cm -1

Girl - 118.5cm -1

Boy - 80.5 cm -1

Boy - 127 cm -1

ii. Teenage Girls & Boys

Boy - 139 cm -1

Girl - 151 cm -1

Girl - 157.6 cm -1

iii. Adults

Male - 178 cm -1

Male - 182.5 cm -1

Female - 157.6cm -1

Female - 178 cm -1

4. Mechanical grading machine - 1

5. Skirt Length Marker - 1

6. Neck Curves - 5

7. Jewellery bust half head -1

8. Jewellery bust Indian face -1

9. Jewellery hand -2

10. Pattern making kit - 30

L scale

Hip curve

Meter scale

French curve

Tracing wheel

Measuring tape

Tailor's chalk

Pencil

Set square

11. Grading scale -10

12. Pattern master -10

13. Paper cutting scissors - 30

14. Hangers for patterns - 5

Requirements of consumables (To be brought by students)

- | | |
|--------------------------------|----------|
| 1. Long lasting Patterns | - 50 |
| 2. See- through plastic sheets | - 50 |
| 3. Brown sheets | - 100 |
| 4. 1: 4 Scale | - 10 |
| 5. 1: 2 Scale | - 10 |
| 6. Marking Scales | - 50 |
| 7. Marking Chalks | - 50 |
| 8. Carbon Paper | - 100 |
| 9. Cloth for draping | - 10m |
| 10. Tapes | - 2 pkts |
| 11. Marking pencils | - 50 |

TOTAL :45 PERIODS

FS3211

PROBABILITY AND STATISTICS

L T P C

(Common to Biotech, Chemical, Fashion,
Petroleum, Polymer, Plastic)

3 1 0 4

OBJECTIVES

At the end of the course, the students would

- Acquire skills in handling situations involving more than one random variable and functions of random variables.
- Be introduced to the notion of sampling distributions and have acquired knowledge of statistical techniques useful in making rational decision in management problems.
- Be exposed to statistical methods designed to contribute to the process of making scientific judgments in the face of uncertainty and variation.

AIM

To impart knowledge on Garment making.

OBJECTIVES

- To teach the students about types of seams and stitches, sewing threads & their quality.
- To impart knowledge on various garment parts and their variations.
- To impart knowledge on use of accessories for garments.

UNIT I**9**

Basic Sewing Techniques:

Seams: Definition, Types of seams, seam quality, seam performance, factors to be considered in the selection of seam, seam finishes, seam defects.

Stitches : Definition, stitch classes, stitch parameters, factors to be considered in the selection of stitches. Stitching defects.

Sewing Thread : Types, construction, sewing thread quality, selection of sewing thread.

UNIT II**9**

Sleeves: Types of sleeves, plain, puffs, gathered, bell, bishop, circular, leg-o-mutton, Magyar sleeves dolman, kimono. Method of application. Mounting of sleeve – one piece, two piece.

Collars: Classification – full, flat, roll, partial roll, puritan collar, sailor collar, square collar, rippled collar, scalloped collar, mandarin, convertible, tie, shawl reverse and notch collar.

UNIT III**9**

Yokes: Definition – Selection of yoke design, different styles of yoke. Simple yoke –yokes with or without fullness – midriff yokes, methods of attaching yokes.

Fullness: Definition types, Darts – single, double, pointed darts, tucks, pin tucks, cross tucks, piped tucks, shell tucks, pleats, knife pleats, box pleats, invertible box pleats, kick pleats, flare, godets, gathers, shirrings, single or double frills. Ruffles.

Hemming Techniques: Definition, factors to be considered in the selection of hems, types of machine stitched hem, hand stitched hem.

UNIT IV**9**

Plackets: Types, regular, top stitched with edge stitch, top stitched with one leg of pressure foot distance, concealed plackets, kurta plackets. Sleeve packet: faced placket, continuous bound placket and diamond placket.

Pockets: Types – patch pocket, patch with lining / flap, front hip, set-in seam, slash pocket with flap-single lip, double lip.

Waist Band: One piece, two piece and tailor waist band, elastic applied.

Cuffs: Types, square shape, round shape.

UNIT V**9**

Introduction and construction techniques of garment closures. Application of zippers-fly, kissing lap, button & button holes, hooks, and eye snaps. Velcro, eyelets, cords. Basic standard of professional sewing. Relationship between pattern making and ultimate quality of finished sample, steps in the construction of sample, planning a logical garment construction sequence, planning a layout, analysis of component pieces and trimmings, economic use of fabric yardage, time effective sewing techniques.

TOTAL : 45 PERIODS**TEXT BOOKS:**

1. Cooklin Gerry, "Garment Technology for Fashion Designers", Blackwell Science Ltd., 1997.
2. Claire Shaeffer, "Sewing for apparel Industry", Prentice Hall, 2000.

REFERENCE:

1. Leila Aitken, "Step by step dress making course", BBC Books, 1992.

FS3213**FABRIC MANUFACTURE**

L	T	P	C
3	0	0	3

AIM

To impart knowledge on different fabric manufacturing technologies and machinery.

OBJECTIVES

- To teach preparatory processes and machinery for weaving
- To teach weaving, warp & weft knitting and non-woven technologies of fabric manufacturing and the machinery used.

UNIT I**9**

Purpose and types of cone winding machines- Yarn clearers -Mechanical, Electrical- Pirn winding machine – Types – yarn faults. Warping & Sectional warping machines. Sizing – size ingredients.

UNIT II**9**

Basic concepts of looms. Types of Looms – handloom – power loom – Automatic looms. Primary motions of a loom. Basic Principles of Tappet looms, Dobby looms, Drop box Looms, Jacquard looms – Card cutting. Basic concepts of Shuttle less looms – Rapier, projectile and Air jet looms. Salient features.

UNIT III**9**

Basic Principles of Knitting – warp knitting – weft knitting, types of warp & weft knitting – yarn quality requirements for knitting – tuck, knit and miss stitch – courses and wales. Types of needles –latch, bearded and compound needles. Sinker - feeders – cylinders. Gauge of the machine. Cams – single-track – multi track.

UNIT IV **9**
 Pattern wheel, pattern drum – programmed tapes – punch tapes for jacquard wett knitting machines- Basic concept of warp knitting machines – width – gauge – needles – Tricot and Raschel warp knitting machine.

UNIT V **9**
 Non-Woven fabrics - Types – different methods of production of non wovens – needle punched, chemical & thermal bonded - application of non woven fabrics.

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Banerjee, "Weaving Mechanism Vol. 1 & 2".
2. Bernard P. Corbman, "Textile fibre to Fabric", McGraw-Hill, 1983.

REFERENCE:

1. PR. Lord and Mohammed, "Weaving: Conversion of yarn to fabric", M.H.Merrine Publishing Co. Ltd., VK, 1998.
2. Spencer D.J., "Knitting Technology", Peramon press Oxford, 1982.
3. Non Wovens 77
4. Paling D.F., "Warp Knitting Technology" Columbine Press Baxton, 1975.
5. W.S. Murphy, "Hand Book of Weaving", Abhishek Publications 2001.

FS3214	WOVEN FABRIC STRUCTURE AND DESIGN	L	T	P	C
		3	0	0	3

AIM

To impart knowledge on various fabric structures / designs and their variations.

OBJECTIVES

To teach the students different types of woven fabric designs, their graphical representation and converting the design in to peg plan for weaving.

UNIT I **9**
 Elements of woven design: Construction of elementary weaves – plain – warp rib- weft rib – mat. Twills – modification of twills. Satin – sateen and their derivatives. Ordinary and Brighton honey comb– modifications. Crepe weaves.

UNIT II **9**
 Bedford cords: plain faced – twill faced. Wadded – modifications. Welt piques: wadded piques – Loose back and fast back welts and piques. Mock – leno – Distorted mock – leno. Spot figuring – arrangement of figuring for dobby and jacquard.

UNIT III **9**

Color theory: light and pigment theory – modification of color – color combination – application of colors – color and weave effects. Extra warp and extra weft figuring. Extra warp and extra weft figuring with two colors.

UNIT IV **9**

Backward fabrics: Warp and weft back – reversible and non-reversible. warp pile – fast wire pile – terry weaves - terry stripe – terry check. Weft pile: plain back – twill back velveteen – Lashed pile corduroy – Weft plush – Length, density and fastness of pile.

UNIT V **9**

Double cloth: Classification – self stitched – face to back – back to face – Combination face to back and back to face stitched double cloth. Wadded double cloth – weft and warp Wadded double cloth – Center warp & Weft Stitched double cloth. Basic Dobby, Jacquard Design.

TOTAL : 45 PERIODS

TEXT BOOK:

1. Grosicki Z., "Watson's Textile Design & Color: Elementary weaves & Figure", Blackwell Science, Commerce place, 1998.

REFERENCES

1. H.Nisbet, "Grammar of textile Design", Tarporevala sons & Co. Pvt. Ltd., 1994.
2. W.S. Murphy, "Textile weaving & Design", Abhishek Publications, 2000.

FS3215	GARMENT PRODUCTION MACHINERY AND EQUIPMENTS	L	T	P	C
		3	0	0	3

AIM

To teach the students various process in garment manufacturing and different types of machines used.

OBJECTIVES

- To expose the students to various types of machines used for fabric spreading and cutting.
- To teach the students, functioning of different types of sewing machines and formation of different stitch.

UNIT I **9**

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

UNIT II **9**

Introduction to cutting machines – Types and functions of cutting machines – straight knife, round knife, band knife, cutting machines – Notches, drills, die cutting machines – Computerised cutting machines – maintenance of cutting machines – common defects in cutting & their remedies.

UNIT III **9**
 Types of needles – Parts of needles and their function – Needle size - sewing thread – properties of sewing threads – ticket number – fabric sewability. Seam quality – effect of stitch type on seam quality. Selection of seam and stitch.

UNIT IV **9**
 Federal classification of seam and stitches – Basic parts of sewing machine – Needle – Bobbin case / Bobbin hook, Loopers – Loop spreader – Threading fingers – Throat plate – Tongue chaining plates – Take up devices – Tensioners – Feed dog – Pressure foot.

UNIT V **9**
 Basic SNLS machine – Parts & their function – Adjustments – Stand height – pedal – Needle Bar – Pressure foot – Feed dog – Differential feed ratio – Reverse feed – Stitch length selection – Feed timing – Needle & Bobbin Thread Tension – Stitch cycle timing diagram. Maintenance of SNLS machine – Common defects and remedies.

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Harold Carr & Barbara Latham, "The Technology of Clothing Manufacture", OmnBook Service, 1994.
2. Laing R.M., Webster J, "Stitches & Seams", The Textile Institute, India, 1998.

REFERENCES:

1. Shaeffer Claire, "Sewing for the Apparel Industry", Prentice Hall, New Jersey, 2001.
2. Singer, "Sewing Lingerie", Cy DeCosse Incorporated, 1991.

FS3216	DYEING, PRINTING AND POLLUTION CONTROL	L	T	P	C
		3	0	0	3

AIM

To teach the students the technology of wet processing.

OBJECTIVES

- To teach the students the various bleaching, dyeing, printing & finishing technologies for the various fabrics & garments.
- To educate the students on pollution control techniques.

UNIT I **9** **BLEACHING**
 Bleaching of cotton with hypochlorites, hydrogen peroxide and sodium chlorites – jigger dyeing, winch dyeing – calendaring – steam calendaring.

UNIT II **9** **DYEING**
 Method of dyeing cotton with direct reactive and vat dyes – dyeing of polyester/cotton – polyester/viscose blends – fastness of different dyeing methods. Different dyeing equipments – soft flow dyeing jet dyeing – J.Box advantages and disadvantages over conventional jigger / winch dyeing – shrinkage control of knitted goods – compactors – study of package yarn dyeing machines. Balloon – drying, relax dryers. Garment dyeing Machines.

UNIT III PRINTING 9

Block, roller, flat bed, rotary and transfer printing Techniques – pigments – reactive – Discharge and resist printing – advantages and disadvantages – screen making – engraving – study of chest and rotary screen printing machines to knitted goods.

UNIT IV FINISHING 9

Garment finishes – Different types of finishes – Enzyme wash, stone wash, acid wash, salt and pepper finish, peach finish, sand blasting, - wrinkle free finish.

UNIT V 9

Causes of water pollution – domestic, industrial, agricultural wastes – DO, BOD, COD – treatment – primary and secondary – sludge disposal- Air pollution – environmental impact – Acid rain – green house effect.

TOTAL : 45PERIODS

TEXT BOOKS:

1. V.A. Shenai, "Technology of Textile Processing – Volume III, V, VII & VIII", Sevak publications, Bombay, 1981.
2. Nitra, "Pollution Control in Textile Mill", NITRA Publishing Ltd., 2001.

REFERENCES:

1. Palmer John. W, "Textile Processing and Finishing aids recent advance", Mahajan Book Distributors, 1996.
2. James Ronald .W, "Printing and Dyeing of fabrics and Plastics", Mahajan Book Distributors 1996.

FS3218	BASIC GARMENT CONSTRUCTION LABORATORY	L	T	P	C
		0	0	3	2

AIM

To impart knowledge on Garment making

OBJECTIVES

- To teach the students about the types of seams and stitches, sewing threads and their quality.
 - To impart knowledge on various garment parts and their variations
 - To impart knowledge on use of accessories for garments.
1. Prepare samples for basic Hand stitches, seams, darts & pleats.
 2. Preparing samples for plackets – continuous bound placket, 2 piece placket, tailors placket, Fly opening & Zipper.
 3. Preparing samples for Necklines – Bias facing, Bias Binding & Fitted facing.
 4. Preparing samples for collars – Peter Pan collar, Full shirt collar, Shawl collar.
 5. Preparing samples for pockets – patch pocket, bound pocket & front hip pocket.
 6. Preparing samples for Sleeves – Plain, Puff, Raglon, Kimono.

SMACHINES REQUIRED: (for a batch of 30 students)

1. Single needle lock stitch machine 30 Nos
2. Steam Iron Box 3 Nos

CONSUMBALES:

Needles
 Canvas material
 Sewing threads
 Fusing canvas
 Elastics
 Sponge
 Fasteners

TOTAL: 45PERIODS

FS3219	DYEING AND PRINTING LABORATORY	L	T	P	C
		0	0	3	2

AIM

To teach the students the technology of wet processing

OBJECTIVES

To teach the students the various bleaching, dyeing, printing and finishing technology for the various fabrics and garments.

1. Identification of fibres- Polyester/Cotton, Polyester/Viscose & Cotton/Viscose.
2. Bleaching of cotton using Hypochlorites.
3. Bleaching of cotton using Hydrogen peroxide.
4. Dyeing of cotton with Direct dyes.
5. Dyeing of cotton with Reactive dyes.
6. Dyeing of cotton with Vat dyes.
7. Dyeing of Polyester using carrier.
8. Dyeing of Knitted Fabric.
9. Determination of Fastness to washing after dyeing.
10. Determination of Shrinkage for woven fabrics/garments.
11. Discharge style- printing on cotton.
12. Resist style- printing on cotton.
13. Computer aided color matching.

TOTAL : 45 PERIODS**LIST OF EQUIPMENTS****(For a batch of 30 students)**

S.no	Description	Quantity required
1	Chemical and dyes	
2	HTHP Beaker dyeng machine	1
3	Pilot Winch	1

4	Sample cone/cheese dyeing machine	1
5	Pilot curing Chamber	1
6	Pilot curing Chamber	1
7	pH meter	1
8	Oven (upto 200C)	1
9	Burners	30
10	Glass wares and apparatus (Beakers of required volume, Pipette with extracting device, burette, Glass rods, Measuring jars 10ml, 100ml and 500ml)	25 each
11	Stainless steel vats (500 ml)	30
12	Water bath	15
13	Thermometers	6
14	Stirrer	2
15	Ager	1
16	Electronic Balance (0.01g to 300g)	2
17	Printing screen	1
18	Printing table	1
19	Squeezee	1

AIM: To develop software to design and simulate the fabric structure and its characteristics.

LIST OF EXPERIMENTS

1. Develop a Dobby Design & prepare a 2D simulation
2. Develop a Jacquard Design & prepare a 2D simulation
3. Develop a Print Design & prepare a 2 D simulation
4. Develop a Dobby design with different weaves
5. Develop a Jacquard design & prepare a card punching for the same.
6. Analysis of woven designs: plain, twill, satin- huck-a-back.
7. Dobby & jacquard cloth analysis.
8. Extra warp & extra weft figuring.
9. Double cloth & terry towels.

TOTAL : 45 PERIODS

LIST OF EQUIPMENTS REQUIRED

Textile Fabric Designing Soft Wares:

Module : Designing Dobby Design
 Designing Jacquard Design
 Designing Print design.

Hard Ware : Pentium III / higher PCs – 15 Nos with suitable

Configuration to Support the Software

Printer	1 No
Plotter	1 No
Scanner	1No
Counting Glass	15Nos
GSM Cutter & Scale	2No
Beesley's Balance	2No
Course length tester	1No
Electronic Balance.	1No

UNIT I INTRODUCTION**9**

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

UNIT II TQM PRINCIPLES**9**

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, PDCA cycle, 5S, Kaizen, supplier partnership - partnering, sourcing, supplier selection, supplier rating, relationship development, performance measures - basic concepts, strategy, performance measure

UNIT III STATISTICAL PROCESS CONTROL (SPC)**9**

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

UNIT IV TQM TOOLS**9**

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

UNIT V QUALITY SYSTEMS**9**

Need for ISO 9000 and other quality systems, ISO 9000:2000 quality system - elements, implementation of quality system, documentation, quality auditing, QS 9000, ISO 14000 - concept, requirements and benefits

TOTAL: 45 PERIODS**TEXT BOOKS**

1. [Dale H. Besterfield](#) et al, **Total Quality Management**, Pearson Education Asia, 1999, Indian Reprint 2002
2. James R. Evans and William M. Lidsay, **The Management and Control of Quality**, 5th Edition, South-Western (Thomson Learning), 2002

REFERENCES

1. Feigenbaum A. V., **Total Quality Management**, McGraw Hill, Singapore, 1991
2. Oakland J. S., **Total Quality Management**, Butterworth - Heinemann Ltd., Oxford, 1989
3. Narayana V. and Sreenivasan N.S., **Quality Management - Concepts and Tasks**, New Age International, New Delhi, 1996
4. Zeiri M., **Total Quality Management for Engineers**, Woodhead Publishers, Cambridge, 1991

FS3302	EMBROIDERY AND SURFACE ORNAMENTATION	L	T	P	C
		3	0	0	3

UNIT I **9**

Introduction and origin of embroidery - general rules for hand and machine embroidery, attachments in sewing machines for embroidery - Selection of needle, threads and fabrics for embroidery

UNIT II **9**

Knowledge, classification and practice of hand embroidery stitches- running, couching, button hole, satin, long and short, wheat, chain, stem, herringbone, cross stitch, knotted stitches, fish bone etc. Some Indian traditional embroideries - Phulkari, Kasuti, Kashmiri embroidery, Kutch work, Chikkankari, Kantha, tribal embroideries- stitches, designs, colours and materials used

UNIT III **9**

Knowledge and practice of the following machine embroideries and surface ornamentations - eyelet work, cutwork, Richelieu work, lace work, drawn thread and fabric work, patch work, mirror work, appliqué, shaded embroidery, Zardosi work, shadow work, stone (Kundan) work, badla work, bead and sequins work, bobbin-thread embroidery, etc.; Suitable surface ornamentation techniques for men's and women's accessories

UNIT IV **9**

Selection of thread colour and suitable stitches for embroidery using computer – Care and maintenance of embroidery articles - pressing embroidery articles - frames and backing materials - Types and purposes; estimating, costing and marketing of finished embroidery goods

UNIT V **9**

CAD software used for embroideries - process of designing, types of stitch applications, punching; Types of embroidery machines and their working - vertical embroidery machines, multi-head embroidery machines - Special attachments in embroidery machines

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Sheila Paine, **Embroidered Textiles**, Thames and Hudson Ltd., London, 1990
2. Gail Lawther, **Inspirational Ideas for Embroidery on Clothes and Accessories**, Search Press United Kingdom, 1993

REFERENCE:

1. Shailaja D. Naik, **Traditional Embroideries of India**, A.P.H Publishing Corporation, New Delhi, 1996

UNIT I **9**

Selection of fabrics, trimmings, seams for children's wear - factors affecting selection - study of various types of kids-wear and children's wear; measurements required for construction of kids and children's wear (Baba suit, baby frock, shorts, rompers, pedal pushers, baby diapers)

UNIT II **9**

Pattern layout rules, common method of layout for asymmetric design, strips, checks and one-way design for children's garments; fit for children's garments

UNIT III **9**

Step by step procedure for construction and minimising fabric consumption for men's boxer's shorts, formal shirts with regular collar, button-down collar - plackets - back tucks - centre and side tucks - balancing of designs - asymmetric and symmetric designs - checks and stripes

UNIT IV **9**

Step by step procedure for construction and minimising fabric consumption for men's formal trousers: - principles involved in fitting - step-by-step construction procedure for men's trousers. Formal trousers - pleated and flat-front - double welt and single welt back pockets – 5-pocket casual trousers; materials, design and construction of commonly used men's apparel accessories: hats, shoes, ties, bow ties, gloves, wallet and belts

UNIT V **9**

Step by step procedure for construction and minimising fabric consumption for men's suits; principles of fit; step by step construction of 2-piece and 3-piece suits - single and double breasted suits; men's innerwear – briefs and vests

TOTAL: 45PERIODS

TEXT BOOKS:

1. Patrick John Ireland, **Fashion Design Illustration: Men**, B.T Batsford Ltd., London, 1996
2. Gerry Cooklin , **Pattern Grading for Children's Clothes**, Om Book Service, New Delhi, 1991

REFERENCES:

1. Singer Sewing Staff, **Sewing Active Wear**, [Creative Publishing International Editors](#), 1986
2. Singer Sewing Staff, **Sewing Pants That Fit**, Cowles Creative Publishing Inc., 1989

FS3304	WOMEN'S WEAR AND LINGERIE	L	T	P	C
		3	0	0	3
UNIT I					9
Importance and principles of taking body measurements – fabric quality requirements and measurements required for construction of women's garments - preparing basic patterns for bodice, sleeves, bifurcated garments and hood					
UNIT II					9
Fabric quality requirements and step by step procedure for pattern making and construction of nighties, western blouse, sari blouse, skirts and tops					
UNIT III					9
Dart manipulation; fitting problems; Fabric quality requirements and step by step procedure for pattern making and construction of salwar kameez – chudidaar					
UNIT IV					9
Fabric quality requirements and step by step pattern making and construction of trousers - peach bottom trousers - pleated trousers; skirts - A-line skirt – 6-gore skirt - circular skirt; Materials , design and construction of commonly used women's apparel accessories: handbag, gloves, scarves/stoles, caps, sashes, stockings, veils, head band and shoes					
UNIT V					9
Fabric quality requirements and use of elastomeric yarns in intimate apparel / lingerie; pattern making and construction of different types of ladies innerwear - brassiere - ladies panties - other lingerie - size and fit of intimate apparel					
					TOTAL: 45 PERIODS

TEXT BOOKS

1. Harold Carr and Barbara Latham, **The Technology of Clothing Manufacture**, Blackwell Science Inc., Oxford, 1994
2. Singer Sewing Staff, Sewing **Lingerie**, Cy DeCosse Incorporated, Minnetonka, 1991

REFERENCE

1. Gerry Cooklin, **Garment Technology for Fashion Designers**, Blackwell Science, Oxford, 1997

FS3305	CLOTHING CARE AND GARMENT FINISHING	L	T	P	C
		3	0	0	3

UNIT I **9**
 Finishing room equipment - steam iron - seam buster - vacuum ironing table - form finishing equipment - trouser topper, shirt press, collar/cuff press, form finisher for jackets and coats; fusing machines for interlinings

UNIT II **9**
 Laundry equipment and laundry reagents - soaps - detergents - cleaning action of soaps, - study of modern and industrial cleaning agents: acetone – white petrol – petrol – CTC and its impact on environment – need to phase out CTC -water treatment plant - soft water - hard water - methods of softening water

UNIT III **9**
 Principles of laundering - stain removal - various solvents for removing stains like blood, tea, rust, oil/grease, etc - different methods of washing – manual washing – machine washing - different types of laundry – laundry equipment – laundering speciality fabrics

UNIT IV **9**
 Study of different types of house hold/industrial washing machines - rotary - swirling - pressure - tumble wash, etc; washing: stone wash, acid wash, enzyme wash, bio-polishing, emerisation, bleaching, laser fading and ozone fading

UNIT V **9**
 Finishing: optical brightening, blueing, mercerisation, liquid ammonia treatment, stiffening, softening, crease resistant and crease-retentive finish, anti-static finish, anti-bacterial finish, water-proofing, flame-proofing, soil-release finish, mildew and moth-proofing

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Harrison P., **Garment Dyeing: Ready-to-Wear Fashion from the Dye House**, The Textile Institute, U.K. 1988
2. Noemia D'Souza, **Fabric Care**, New Age International (P) Ltd. Publishers, Chennai, 1998,

REFERENCES:

1. Marsh J. T., **An Introduction to Textile Finishing**, Chapman and Hall Ltd., London, 1979
2. Shenai V. A., **Technology of Textile Finishing**, Sevak Publications, Bombay, 1995
3. Hall A. J., **Textile Finishing**, Elsevier Publishing Co. Ltd., New York, 1986

UNIT I**9**

SAMPLING TECHNIQUES AND FIBRE TESTING: Definition – random, biased – sampling techniques for fibre, yarns and fabrics; standard RH and temperature for testing and mechanical processing – fibre testing by High Volume Instrument (HVI)

YARN TESTING I: Yarn count – instruments used for determination of yarn count – Quadrant balance – Electronic yarn count balance. Direction of twist - twists testers; tension type - take-up type - Electronic twist tester -Yarn hairiness tester

UNIT II**9**

YARN TESTING II: Yarn strength - Single yarn and lea strength testers. Classification of variations in yarn - methods of measuring yarn evenness – yarn appearance board - ASTM standards - electronic capacitance - Uster evenness tester - yarn faults classification - Uster Classimat

UNIT III**9**

FABRIC TESTING: Crimp - Shirley crimp tester - fabric tensile strength tester - ravelled strip method - grab method; Elmendorf tearing strength tester, hydraulic bursting strength tester; Martindale abrasion resistance tester – fabric pilling: ICI pillbox tester

UNIT IV**9**

FABRIC DRAPE: Fabric drape - drape meter; fabric stiffness: Shirley stiffness tester; fabric crease resistance and crease recovery tester; Handle - Kawabata and FAST methods – fabric handle value – subjective and objective evaluation

FABRIC PERMEABILITY: Terms in air permeability and water permeability - Shirley air permeability tester - water permeability testers

UNIT V**9**

APPAREL TESTING: Seam strength testing – yarn severance testing in seam; evaluation of interlining quality; colour fastness testing – washing, rubbing, light and perspiration; apparel dimensional stability testing – durable press evaluation - snap/button pull strength testing

TOTAL: 45PERIODS**TEXT BOOKS**

1. Grover E. G. and Hamby D. S., **Handbook of Textile Testing and Quality Control**, Wiley-Eastern Pvt. Ltd., New Delhi, 1969
2. J. E. Booth, **Principles of Textile Testing**, CBS Publishers and Distributors, New Delhi, 1996

REFERENCES

1. Sundaram V., **Handbook of Textile Testing**, CTRL Publication, Bombay
2. BSI, **BSI Handbooks**, British Standard Institution, Manchester
3. BIS, **BIS Handbooks**, Bureau of Indian Standards, Delhi, 1989
4. Pradip V. Mehta, **“An Introduction to Quality control for the Apparel Industry”** ASQC Quality Press, Marcel Dekker Inc., New York 1995

LIST OF EXPERIMENTS

1. Determination of count of yarn and CV %
2. Determination of yarn lea strength, CV% and CSP
3. Determination of single yarn strength and CV%
4. Determination of yarn evenness grades using a yarn appearance board winder
5. Determination of single yarn and double yarn twist and CV% (2 sessions)
6. Determination of the construction particulars of a given fabric and its tensile strength and CV% , and its seam strength and seam slippage properties (2 sessions)
7. Determination of the construction particulars of a given fabric and its abrasion resistance
8. Determination of the construction particulars of a given fabric and its bursting strength
9. Determination of the construction particulars of a given fabric and its tearing strength
10. Determination of the construction particulars of a given fabric and its stiffness-related properties and crease recovery angle (2 sessions)
11. Determination of the construction particulars of a given fabric and its pilling tendency
12. Determination of the construction particulars of a given fabric and its drape coefficient

TOTAL: 45 PERIODS**LIST OF EXPERIMENTS**

Construction of,

1. Children's baba suit
2. Children's rompers
3. Children's frock
4. Men's shorts
5. Men's formal shirt (2 sessions)
6. Men's formal trousers (3 sessions)
7. Men's casual trousers (3 sessions)
8. Briefs and vests (3 sessions)

TOTAL: 45 PERIODS

FS3310

TECHNICAL SEMINAR

L T P C
0 0 3 2

During the seminar session each student is expected to prepare and present a topic on on Apparel Technology including Fashion. Three periods per week are to be allotted. A faculty guide is to be allotted and he/she will guide and monitor the progress of the student and maintain attendance also. Internal Marks to be earned on continuous assessment basis. Final exam assessment is made based on the presentation and viva – voce jointly by an internal and external examiners.

FS3311

PRINCIPLES OF MANAGEMENT

L T P C
3 0 0 3

UNIT I HISTORICAL DEVELOPMENT

9

Definition of Management - Science or Art - Management and Administration - Development of Management Thought - Contribution of Taylor and Fayol - Functions of Management - Types of Business Organisation

UNIT II PLANNING

9

Nature and Purpose - Steps involved in Planning- Objectives- Setting Objectives- Process of Managing by Objectives- Strategies, Policies and Planning Premises- Forecasting – Decision making

UNIT III ORGANISING

9

Nature and Purpose - Formal and informal organization - Organization Chart - Structure and Process - Departmentation by difference strategies - Line and Staff authority - Benefits and Limitations - De-Centralization and Delegation of Authority - Staffing - Selection Process - Techniques - HRD - Managerial Effectiveness

UNIT IV DIRECTING

9

Scope - Human Factors - Creativity and Innovation - Harmonizing Objectives - Leadership - Types of Leadership Motivation - Hierarchy of needs - Motivation theories - Motivational Techniques - Job Enrichment - Communication - Process of Communication - Barriers and Breakdown - Effective Communication - Electronic media in Communication

UNIT V CONTROLLING

9

System and process of Controlling - Requirements for effective control - The Budget as Control Technique - Information Technology in Controlling - Use of computers in handling the information - Productivity - Problems and Management - Control of Overall Performance - Direct and Preventive Control - Reporting - The Global Environment - Globalisation and Liberalisation - International Management and Global theory of Management

TOTAL: 45 PERIODS

TEXT BOOKS:

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

REFERENCES

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

FS3312

APPAREL PRODUCTION MANAGEMENT

L T P C
3 0 0 3

UNIT I INTRODUCTION 9

Production - Definitions - Terminology - Functions of Production Department – Duties and Responsibilities of a Production Manager / Supervisor – Pre-production activities - lead time – Product development steps from prototype to production model - Marker planning - lay lot planning; numerical exercises on lay lot planning

UNIT II PRODUCTION SYSTEMS 9

Different manufacturing systems; make through – group system – batch system – Progressive bundle system – synchro straight line system – mechanical conveyor system – unit production system – quick response system - advantages and disadvantages

UNIT III OPERATION SEQUENCE DEVELOPMENT 9

Garment breakdown with machine and attachment details, development of production grid for T-Shirts - development of production flowchart – men’s full sleeve shirt – trousers – five-pocket jeans – ladies night dress – shorts – T-shirt

UNIT IV WORK STUDY 9

Method Study and Work Measurement -Techniques - Principles of Motion Economy – Classification to Movements - Process Flow Chart – Two-handed Process Chart, Micro-motion Study - Time Study – Definition - Steps in making a Time Study - Breaking the Job into Elements - Stop Watch Procedure. Time Study Rating, Calculation of Standard Time

UNIT V PRODUCTION PLANNING AND CONTROL 9

Capacity calculation for cutting, sewing and finishing; determination of machine requirements for a new factory; line balancing: determination and allocation of manpower and machine for balanced production in existing plant for a given target

TOTAL: 45PERIODS

TEXT BOOKS

1. Chuter A. J., **Introduction to Clothing Production Management**, Blackwell Science Publishing, 1995
2. Harold Carr and Barbara Latham, **The Technology of Clothing Manufacture**, Om Book Service, New Delhi, 1995
3. Cooklin Gerry, **Introduction to Clothing Manufacture**, Blackwell Science Ltd., Oxford, 1995

REFERENCES

1. Ruth E. Glock and Grace I. Kunz, **Apparel Manufacturing: Sewn Product Analysis**, Fourth Edition, Pearson Education, New Delhi, 1994, ISBN: 8177580760 Jacob Solinger, **Apparel Production Handbook**, Van Nostrand Reinhold Publications, New York, 1998

FS3313

KNITTED FABRIC STRUCTURE

L T P C
3 0 0 3

UNIT I

9

Knit stitch, float stitch, tuck stitch, symbolic (graph paper) representation of stitches, diagrammatic representation of stitches; Patterning mechanism: pattern wheel, pattern drum, peg drum machine, punched steel tape, jacquard punched paper roll jacquard, electronic devices for needle selection

UNIT II

9

Derivatives of plain knit: LeCoste, cross tuck, satin, knitted twill, honey comb, popcorn, jersey blister, French terry, thick fleece, ribbed effect, plaiting, seer sucker effect, accordion type of fabrics

UNIT III

9

Ornamentation of rib structure 2X2 rib structure, half cardigan, full cardigan, derivatives of inter lock structures; eight lock, Ponte-di-Roma, Ottoman rib, Bourrelet, TEXI-pique, PIN-JUCK, Milano rib, French Pique, Swiss Pique

UNIT IV

9

Representation of warp knit structures - point paper, chain-link notation, single fabrics: chain stitch, tricot lap, extension of 1-and-1 lapping, full tricot, lock knit, reverse lock knit, satin, loop raided fabrics, queen's cord, sharkskin, blind lap, open work effects, Marquissette, sand-flair net, hexagonal net

UNIT V

9

Patterning in weft knitting – single jersey patterning with multi-cam tracks – plain stitch with single feeder, knit-and-miss stitches – two-feeder, three-feeder, four-feeder supply; coloured patterning in weft knitting – two-colour, three-colour patterns; Striped patterns – horizontal stripe patterns – vertical stripe patterns – square patterns; socks knitting – socks shaping, yarn passage - fabric construction

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Ajgaonkar D.B, **Knitted Technology**, Universal Publishing Corporation, Mumbai, 1998
2. Anbumani N., **Knitting – Fundamentals, Machines, Structures and Developments**, New Age International Publishers, New Delhi, 2007

REFERENCE:

1. Spencer D.J., **Knitting Technology**, Woodhead Publishing Limited, England, 3rd Edition, 2001

UNIT I

9

Introduction - Quality definition - Quality control and its necessity - inspection and importance- functions of inspection - systems of inspection- types if inspection - hundred percent inspection - sampling inspection - comparison of 100% inspection and sampling inspections. AQL standards; Quality assurance - Difference between quality assurance and inspection; Inspection Agencies

UNIT II

9

Quality standards, statistical quality control - control charts, their applications – importance of sampling - use of sampling techniques; case studies of apparel manufacturing organisations practising the concepts of ISO-9001, Quality Circles, 5-S, Six-Sigma, ISO-14000, TQM and SA-8000

UNIT III

9

Types of control forms - basic production systems - Principles for choosing a production system - evaluating systems - flow process and grid charts - basic flow process grid construction - flow process grid for production control - scheduling calculations graph method - schedules for producing many styles simultaneously - producing many styles continuously in one line

UNIT IV

9

Quality control for fabrics - different types of defects in fabrics - major and minor faults - fabric inspection system. Quality control in pattern making, grading, marking and marker efficiency - Quality control in stitching and production analysis - co-coordinating department activities - Distribution of tickets and maintenance of records; establishing merchandising standards; Quality control of trims accessories

UNIT V

9

Tolerance and quality standard for fabrics, processing, cutting, stitching in garment industry, tolerances and quality standard for finished garments. Quality control system and standards for packing and packed goods, warehousing and shipping - cost of quality conformance- cost of non-conformance

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Grover E. G. and Hamby D. S., **Hand Book of Textile Testing and Quality Control**, Wiley Eastern Pvt. Ltd., New Delhi, 1969
2. Jacob Solinger, **Apparel Manufacturing Handbook**, Prentice Hall, New Jersey, 1993

REFERENCE

1. Samuel Eilon, **Production Planning and Control**, Macmillan, New York, 1962

UNIT I

HUMAN ANTHROPOMETRICS AND SIZING SYSTEMS

8

Definition, Traditional anthropometry, Development of sizing system, International sizing, Principles of Sizing system, Size categories in Menswear, women’s wear and children’s wear

UNIT II	OBJECTIVE EVALUATION OF CLOTHING APPEARANCE	9
Fabric properties related to clothing appearance and fit, objective evaluation of fabric wrinkling, fabric pilling, seam Pucker and Overall garment appearance		
UNIT III	EVALUATION OF CLOTHING FIT	10
Subjective Evaluation of Clothing Fit: Definition of Fit, Importance of Fit, Standards of Fit, influence of clothing Fit, Testing methods for dimensional Fit, Subjective rating scales, Subjective fitting Guide		
Objective Evaluation of Clothing Fit: Fit Formula, Algebraic evaluation of clothing Fit, Pressure evaluation of clothing Fit, 3D modelling of Pressure Fit		
UNIT IV	3-D BODY SCANNING	8
Global development of body scanners, Challenges of body scanning, Principles and operations of body scanning technologies		
UNIT V	GARMENT DESIGN FOR INDIVIDUAL FIT	10
Pattern alteration for fit, three-dimensional apparel design systems for pattern generation and garment fit, virtual garmenting		
Fitting Solutions: Trouser, sari blouse, Skirt, Ladies' top, Shervani -Analysing the causes for poor fit, solving fitting problems		

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Lynn MacIntyre and Marcy Tilton, **Easy Guide to Sewing**, Taunton Press Inc., USA, 2009
2. **The Perfect Fit: Classic Guide to Alter Patterns**, Creative Publishing International, USA, 2005

REFERENCES:

1. Fan J., Yu .W and Hunter L., **Clothing Appearance and Fit**, Textile Institute, Woodhead Publishing Limited, England, 2004
2. Sandra Betzina, **Fast Fit-Easy Pattern Alterations for Every Figure**, The Taunton Press Inc., Singapore, 2003

RELATED JOURNALS

1. **Journal of Textile & Apparel Technology and Management**, North Carolina, USA
2. **International Journal of Clothing Science and Technology**, Emerald Group Publishing Ltd., UK

FS3317	COMPUTER-AIDED GARMENT DESIGN LABORATORY	L T P C
		0 0 3 2

LIST OF EXPERIMENTS

1. (i) Developing design, pattern and marker plan for children's wear: for a baby frock using a one-way fabric of 38" and 42" width; (ii) Calculating the marker efficiency
2. (i) Developing design, pattern and marker plan for children's wear: for baby rompers using a two-way fabric of 38" and 42" width; (ii) Calculating the marker efficiency
3. (i) Developing design, pattern and marker plan for ladies top using corduroy fabric of 44" and 52" width; (ii) Calculating the marker efficiency and developing a lay lot plan
4. (i) Developing design, pattern and marker plan for ladies skirt using plaid fabric of 38" and 60" width; (ii) Calculating marker efficiency and developing a lay lot plan

5. (i) Developing design, pattern and marker plan for men's full-sleeve shirt using a checked fabric of 52" and 60" width; (ii) Calculating marker efficiency and developing a lay lot plan
6. (i) Developing design, pattern and marker plan for men's formal trousers using a pencil stripe fabric of 60" and 72" width; (ii) Calculating marker efficiency and developing a lay lot plan
7. Designing a children's wear including accessories and developing a 3-D visual merchandise window display
8. Designing ladies party wear including accessories and developing a 3-D visual merchandise window display (2 sessions)
9. Designing men's formal wear including accessories and developing a 3-D visual merchandise window display
10. Designing Capri / ladies top including accessories and developing a 3-D visual merchandise window display
11. Designing cargo pants / denim top including accessories and developing a 3-D visual merchandise window display (2 sessions)
12. Designing pedal pushers/T-shirt including accessories and developing a 3-D visual merchandise window display (2 sessions)

TOTAL: 45 PERIODS

FS3318

GARMENT CONSTRUCTION LABORATORY – II

**L T P C
0 0 3 2**

LIST OF EXPERIMENTS

Construction of,

- | | |
|-----------------------|--------------|
| 1. Ladies Salwaar | (2 sessions) |
| 2. Ladies Kameez | (2 sessions) |
| 3. Ladies top | (2 sessions) |
| 4. Ladies blouse | (2 sessions) |
| 5. Ladies sari blouse | (3 sessions) |
| 6. Ladies trousers | (2 sessions) |
| 7. Ladies brassiere | (1 sessions) |
| 8. Ladies panties | (1 sessions) |

TOTAL: 45 PERIODS

FS3319

DESIGN COLLECTION LABORATORY

**L T P C
0 0 3 2**

EXPERIMENTS

1. Forecasting fabric colours and patterns for the ensuing seasons based on international forecast
 2. Collecting fabric swatches and colours based on a selected theme of forecast
 3. Preparing story board / mood board / fabric board / colour board (2 sessions)
- Practice in fashion illustration:**

4. Sketching of fashion figures in different poses – children, female and male (2 sessions)
5. Sketching various styles of sleeves, collars, necklines, pockets and garments
6. Sketching accessories – hat, hand bags, jewellery and footwear
7. Illustrating fashion models
8. Rendering different fabric textures on paper
9. Preparing illustrations board for the theme using selected fabrics/colours (2 sessions)
10. Preparing a display board of surface ornamentation techniques used
11. Preparing flat sketches of the garments
12. Preparing a display board for selected accessories

TOTAL : 45 PERIODS

FS3401	MANAGEMENT OF APPAREL UNITS	L T P C
		3 0 0 3

UNIT I		9
	Classification of garment units – woven – knit garments – lingerie – Leather garments – sports wear – outer wear – under garments – hospital wear and Industrial Garments – Entrepreneurship - Entrepreneurship development skills – concept of small scale industry – advantages of SSI units	

UNIT II		9
	Setting up a garment unit - study of land; SA-8000 Norms; Capital, labour market demand etc; Preparing a project; Large scale industry-its advantages over SSI; Financial Institutions; Marketing – national and international marketing; Management information system	

UNIT III		9
	Labour – study of labour laws –factory act – labour laws – welfare measures – Industrial safety act – eco – friendly textiles	

UNIT IV		9
	Market – study of markets for raw materials and markets for finishing products – local markets – international markets. Spring /summer – autumn /winter seasons effecting fashion trends; Brief introduction about - Supply Chain Management, Retailing, Brand Management	

UNIT V		9
	Exports policy – trade documentation and quota policy – AEPC and its role in the garments industry; advertising – different media – trade fair displays – exhibitions – fashion shows – buyer-seller meet	

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Sharma P. K., **Development Banks and Entrepreneurship Promotion in India**, Mital Publications, New Delhi, 1991
2. Khanna O. P., **Industrial Engineering and Management**, Dhanpat Rai Publications (P) Ltd., New Delhi, 1970

UNIT I INTRODUCTION**9**

Govt. of India's export entitlement policy – EXIM policy – export promotional bodies and their activities – EPZ (Export Processing Zone) – SEZ (Special Economic Zone) – apparel parks – TUFS

UNIT II EXPORT DOCUMENTATION**9**

Need for Documents – Invoice – Certificate of Origin – L/C- Shipping Bill – Bills of Exchange – Bill of lading - GR Form – Packing List – Duty draw back – Export License – Marine Insurance Policy

UNIT III INTRODUCTION TO COST ACCOUNTING**9**

Cost - Types of cost: Fixed cost, variable cost, semi variable cost, conversion cost, differential cost - Elements of cost - direct material cost - direct expenses - direct wages - indirect materials - indirect expenses - indirect labour - overheads - production overhead - administrative overhead - selling overhead distribution overhead – Components of cost sheet

UNIT IV MATERIAL AND CMT COST**9**

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

UNIT V PREPARATION OF PRE-COST SHEET**9**

Packing and labelling cost - different types and functions. Uses of brand and size label - cost of bought out components, thread, Button, Zippers, Interlining, Shipment cost, cost calculation of ladies, Men and children's wear - woven and knitted - simple problems.

TOTAL: 45 PERIODS**TEXT BOOKS:**

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

REFERENCES:

1. Shivaramu S., **Export Marketing – A Practical Guide to Exporters**, Wheeler Publishing, London, 1996
2. Koshy Darlie O., **Effective Export Marketing of Apparel**, Global Business Press, New Delhi, 1996
3. Hearle J. W. S., Hines T. and Suh M. (Ed.), **Global Marketing of Textiles**, JTI, London, 1997

FS3404

DISASTER MANAGEMENT

L T P C

3 0 0 3

UNIT I INTRODUCTION

9

Introduction – Disaster preparedness – Goals and objectives of ISDR Programme- Risk identification – Risk sharing – Disaster and development: Development plans and disaster management –Alternative to dominant approach – disaster-development linkages -Principle of risk partnership

UNIT II DISASTER MANAGEMENT AND RISK REDUCTION IN GARMENT INDUSTRY

9

Types of disasters and disaster plans: Processing machines and utilities. Sustainable livelihoods and their Protection – Recovery from disaster –fire, boiler mishap. Garment Industry health monitoring and Disaster aids.

UNIT III AWARENESS OF RISK REDUCTION

9

Trigger mechanism – constitution of trigger mechanism – risk reduction by education – disaster information network – risk reduction by public awareness

UNIT IV DEVELOPMENT PLANNING ON DISASTER

9

Implication of development planning – financial arrangements – areas of improvement – disaster preparedness – community based disaster management – emergency response.

UNIT V SEISMICITY

9

Seismic waves – Earthquakes and faults – measures of an earthquake, magnitude and intensity – ground damage – Tsunamis and earthquakes

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Pardeep Sahni, Madhavi malalgoda and ariyabandu, “Disaster risk reduction in south Asia”, PHI
2. Amita sinvhal, “Understanding earthquake disasters” TMH, 2010.

REFERENCE BOOKS:

1. Pardeep sahani, Alka Dhameja and Uma medury, “Disaster mitigation: Experiences and reflections”, PHI

FS3406

MINI - PROJECT AND DESIGN COLLECTION LABORATORY

L T P C

0 0 3 2

EXPERIMENTS

- a. Constructing garments according to design collection
- b. Preparing costing sheets for the garments
- c. Creating a portfolio of the designs in suitable format
- d. Displaying the portfolio and constructed garments through a formal presentation

(Minimum of four garments is to be developed in the course)

LIST OF EXPERIMENTS**PERFORMING A STUDY OF,**

1. A Single-Needle Lock Stitch Machine for its parts and various settings points and its threading; preparing stitch samples and calculating the SPI for specified/chosen stitch lengths
2. A Double-Needle Lock Stitch Machine for its parts, various settings points and its threading; preparing stitch samples and calculating the SPI for given stitch lengths
3. An Over-lock Machine for its parts, various settings points and its threading; preparing stitch samples and calculating the SPI for given stitch lengths
4. An Over-lock Machine for making adjustments of the needle-thread and looper-thread tensions, feed-ratio, needle-and-looper setting and knife setting (2 sessions)
5. A Flat-lock Machine for its parts, various settings points and its threading; preparing stitch samples and calculating the SPI for given stitch lengths
6. A Flat-lock Machine for making adjustments of the needle-thread and looper-thread tensions, feed-ratio, needle-and-looper setting and spreader setting (2 sessions)
7. A Button-sewing Machine for its parts, various settings points and its threading; preparing samples
8. A Button-holing Machine for its parts, various settings points and its threading; preparing samples
9. A Feed-off-the-arm Machine for its parts, various settings points and its threading; preparing stitch samples
10. A Flat-lock Elastic Attaching Machine for its parts, various settings points and its threading; preparing samples
11. A Bar-tack Machine for its parts, various settings points and its threading; preparing stitch samples
12. Identifying various stitch defects, their causes and remedies; adjustment of machine settings (2 sessions)

TOTAL : 45 PERIODS

Each practical session will consist of three-period seminars on technical topics during which 15 students will make 10-minute presentations.

A faculty with good communication and presentation skills will be in charge of this practical and s/he will provide oral and written feedback on the effectiveness of individual presentations with regard to content, use of presentation aids, body language (posture, eye-contact, gestures, voice, fluency of delivery, pronunciation, etc) and the extent to which the audience is involved.

The audience will consist of the batch of students for Semester 8. To encourage student awareness of presentation skills, the faculty in charge will motivate students in the audience to provide their feedback on each presentation before giving her/his feedback.

Students are to be encouraged to use various presentation aids such as PowerPoint slides, demonstrative models, chalk/white boards, posters, etc.

Each student is to make at least three presentations on different technical topics. The faculty in charge will maintain records of the individual student progress in this practical and also student attendance.

FS3409 **PROFESSIONAL ETHICS AND HUMAN VALUES** **L T P C**
3 0 0 3

UNIT I HUMAN VALUES 10

Morals, values and ethics - integrity - work ethic - service learning - civic virtue - respect for others - living peacefully - caring - sharing - honesty - courage - valuing time - cooperation - commitment - empathy - self-confidence - character - spirituality

UNIT II ENGINEERING ETHICS 9

Senses of 'engineering ethics' - variety of moral issues - types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy - models of professional roles - theories about right action - Self-interest - customs and religion - uses of ethical theories

UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION 9

Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study

UNIT IV SAFETY, RESPONSIBILITIES AND RIGHTS 9

Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the Three Mile Island and Chernobyl case studies

Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - intellectual property rights (IPR) - discrimination

UNIT V GLOBAL ISSUES 8

Multinational corporations - environmental ethics - computer ethics - weapons development - engineers as managers - consulting engineers-engineers as expert witnesses and advisors - moral leadership - sample code of ethics (Specific to a particular Engineering Discipline)

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Mike Martin and Roland Schinzinger, **Ethics in Engineering**, McGraw-Hill, New York 1996
2. Govindarajan M., Natarajan S., and Senthil Kumar V. S., **Engineering Ethics**, Prentice Hall of India, New Delhi, 2004

REFERENCES:

1. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, **Engineering Ethics – Concepts and Cases**, Wadsworth Thompson Learning, United States, 2000 (Indian Reprint)
2. John R Boatwright, **Ethics and the Conduct of Business**, Pearson Education, Fifth Edition New Delhi, 2003
3. Edmund G. Seebauer and Robert L. Barry, **Fundamentals of Ethics for Scientists and Engineers**, Oxford University Press, Oxford, 2001
Charles B. Fleddermann, **Engineering Ethics**, Pearson Education / Prentice Hall, New Jersey, 2004

FS3001

ADVANCED PATTERN MAKING

L	T	P	C
3	0	0	3

UNIT I

9

Development of design and patterns using $\frac{1}{4}$ scale for women's formal wear - trousers and shirt; Women's casual wear - house coat, Ladies jeans; Women's party wear - Single piece party dress and Chudidaar set

UNIT II

9

Development of design and patterns using $\frac{1}{4}$ scale for formal menswear - shirts, trousers; Casual menswear - pyjamas, Bermudas; men's - party wear – sherwani and kurta

UNIT III

9

Development of design and patterns using $\frac{1}{4}$ scale for children's uniform, children's play time dress, children's night dress

UNIT IV

9

Solving fitting problems for menswear, women's wear and children's wear - Principles of good fit, alternation of patterns for defective fit, unusual figures

UNIT V

9

Introduction to draping using dress forms, draping skills - preparation of bodice pattern, skirt (A-line skirt, 6-gore skirt, circular skirt), sleeve, pant and collar (convertible collar, peter pan collar, turtle neck collar, shawl collar) by the draping method; Techniques of draping - neckline cowl, side seam cowl, bias cowl, bustier, flounces, peplum

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Gerry Cooklin, **Master Patterns and Grading for Women's Outsizes**, Blackwell Scientific Publications, Oxford, 1995
2. Gerry Cooklin, **Pattern Grading for Men's Clothes: The Technology of Sizing**, Blackwell Scientific Publications, Oxford, 1992

REFERENCES:

1. Gillian Holman, **Pattern Cutting Made Easy**, Blackwell Scientific Publications, Oxford, 1997
2. Natalie Bray, **More Dress Pattern Designing**, Blackwell Scientific Publications, Oxford, 1986
3. Fan J., Yu W. and Hunter L., **Clothing Appearance and Fit: Science and Technology**, Woodhead Publishing Ltd, Cambridge, 2004

FS3002	CAD/CAM IN APPAREL PRODUCTION	L	T	P	C
		3	0	0	3

UNIT I **9**

Concept of computerised pattern making – selection of hardware and software; Computer-aided manipulation of pattern pieces to create individual styles, grading and marker planning; Application of garment design CAD software; Computer application in purchase, inventory control and sales, computerisation in quality control and production control

UNIT II **9**

Computer-aided production planning in garment manufacturing; Introduction to finite scheduling concept and fast reading software; Creating product and order planning, updating, eliminating late deliveries – General set up, allowances and matrices – Analyzing line balancing in different departments – control mechanisms – critical path and time tables

UNIT III **9**

Introduction to computer – Concepts of CAD / CAM, Applications of CAD / CAM in apparel industry; Effectiveness of using CAD / CAM in apparel production and enterprise management; Selection of software - different software available for textile designing and fashion designing; Important of design using CAD; Special tools and skills and program application for lines drawing and images using software like CorelDraw and Photoshop; Developing designs for dobby, jacquard, knit and printing. Weave terms, sample swatch card, categorizing fabrics

UNIT IV **9**

Current use of fashion designing software in industry and designing field, creating a basic pattern motif, editing a basic motif, creating a toss repeat, colour selection, working with colour, colour edition, rendering textures and lighting, 3D-Simulation – story board and cataloguing; Developing garment designs for men’s, women’s and children’s fashion figures along with accessories, developing a design library of garment details

UNIT V **9**

Creating patterns with CAD for men’s and women’s wear, pattern making – grading – marker efficiency – using CAD. Computer aided colour matching. Solving fitting problems in men’s and women’s garments using CAD - Principles of a good fit; alteration of pattern for defective figures – Develop patterns using CAD for men’s and women’s wear – shorts – trousers, chinos – shirts – SB-coat, DB-coat

TOTAL: 45 PERIODS

TEXT BOOKS

1. Kathleen Colussy, **Fashion Design on Computers**, Prentice Hall, New Delhi,2001
2. Patrick Taylor, **Computers in the Fashion Technology** Om Book Service, New Delhi,1994
3. Winifred Aldrich, **Metric Pattern Cutting for Menswear**, Om Book Service, New Delhi,1997
4. Stephen Gray ,**CAD / CAM in Clothing and Textiles**, Gower Publishing Limited, Great Britain, 1998
5. Winifred Aldrich, “**CAD in Clothing and Textiles**”, Blackwell Science, 2nd Edition, Oxford, 1992

REFERENCES:

1. Winifred Aldrich, **CAD in Clothing and Textiles**, Blackwell Science Ltd., Oxford, 1994
2. Gerry Cooklin, **Pattern Grading for Children's Clothes**, Blackwell Science, Oxford 1996
3. Gerry Cooklin, "Master Patterns and Grading for Women's Outsizes", Blackwell Science, Oxford, 1995

FS3003

COMPUTER APPLICATIONS IN APPAREL INDUSTRY

L T P C
3 0 0 3

UNIT I COMPUTER BASICS

9

Computer basics - computer specification - input/output device- concept of internet, web and their application in garment industry; CAA - computer aided administration, CAD- computer aided designing, CAM- computer aided manufacturing, and CIM- computer integrated manufacturing

UNIT II COMPUTER AIDED COLOUR

9

Computer-aided colour matching- CAD system for printing - textile CAD- development of woven design using textile CAD-pattern making and grading using apparel software and digitizer marker efficiency; concept of computer application in fabric defect checking - computerized fabric laying - cutting - sorting and labelling machines

UNIT III COMPUTER APPLICATION IN SEWING

9

Computer application in sewing- computerized unit production systems used in apparel industry- computer application in embroidery-computerized needle punching-computerized embroidery machines - computer controlled overhead transport and warehouse storage systems

UNIT IV CUT PLANNER AND E-COMMERCE

9

Cut planner-general sewing data- product development using CAD-computer application in logistics- bar coding system .E-Commerce in apparel industry - concept of ERP and its application in garment unit - electronic data interchange

UNIT V VIRTUAL FITTING

9

Draping models in commercial CAD, Virtual fitting, 3-dimensional apparel design systems for pattern generation and garment fit, 3D body scanning, principles and operations of body scanning technologies- 2D photographic method

TOTAL: 45 PERIODS

TEXT BOOKS

1. Aldrich Winifred, **CAD in Clothing and Textiles**, Blackwell Science Ltd., Oxford, 1994
2. Taylor Patrick, **Computer in the Fashion Technology**, Om Book Service, New Delhi, 1997

REFERENCES

1. Gupta Sanjeev and Gupta Shameena, **Computer Aided Management**, Excel Books, New Delhi, 2004
2. Fan J., Yu W. and Hunter L., **Clothing Appearance and Fit: Science and Technology**, Woodhead Publishing Ltd, Cambridge, 2004

UNIT IV **9**

Dye cleaning agents – pigments – bleaching agents – solvents – guidance to dyestuff manufacturers

UNIT V **9**

Permissible quantities of toxic and hazardous chemicals in various categories of textile products
– Organisations providing certification for safe textile products

TOTAL: 45 PERIODS

REFERENCES:

1. **Are Textiles Finishing the Environment?**, Conference Proceedings, Textile Institute, Manchester, 1990
2. Reife A. and Freeman H.S., **Environmental Chemistry of Dyes and Pigments**, John Wiley and Sons, New York, 1996

FS3006 **FASHION MARKETING** **L T P C**

3 0 0 3

UNIT I **FASHION MARKETING** **9**

Definition of fashion - Fashion marketing – Development of fashion market – Size structure – marketing requirement- Fashion buyer – Consumer influence on market

UNIT II **FASHION** **9**

Fashion, fad, style – Application – Society fashion and individual fashion – their coordination – wardrobe

UNIT III **ILLUSIONS** **9**

Applied illusions – Physical effects- Overall height- over all weight – Covering body defects by design – Visual design in dress in Australia - Brazil – Germany - India – Japan - Nigeria

UNIT IV **FASHION MARKETING RESEARCH** **9**

Fashion marketing Research – Purpose of research – Research design and data sources – Sampling methods – Data collection – Forecasting fashion – Market segmentation - Fashion marketing mix

UNIT V **FASHION INDUSTRY** **9**

Fashion products and its importance – Fashion industry and new product development – Fashion designers role in apparel market – Branded products – personal labels – stores that seek the merchandise

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Mike Easey, **Fashion Marketing**, Blackwell Publishers, Oxford, 2000.
2. Maurice J. Johnson and Evelyn C. Moore, **Apparel Product Development**, Prentice Hall Inc., New Jersey, 2001

REFERENCES

1. Marian L. Davis, **Visual Design in Dress**, Prentice Hall Inc., New Jersey, 1976
2. Elaine Stone, **Fashion Merchandising**, McGraw-Hill Inc., US, Fourth Edition

FS3007

PRODUCT ENGINEERING AND PLANT LAYOUT

L T P C
3 0 0 3

UNIT I

8

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

UNIT II

9

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

UNIT III

10

Production management analysis; Analysis of techniques for material utilisation and cutting of raw materials for all types of sewn products principles and methods of costing, evaluation production problems in spreading, cutting and cost control

UNIT IV

9

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 fine layout, government regulations for plant layouts

UNIT V

9

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

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Jacob Solinger, **Apparel Manufacturing Handbook**, VanNostrand Reinhold Company, London, 1980
2. Bethel, Tann, Atwater and Rung, **Production Control**, McGraw Hill Book Co., New York, 1948

REFERENCES:

1. Biegel, John E., **Production Control – A Quantitative Approach**, Prentice Hall Inc., USA, 1971
2. Immer, John R., **Layout Planning Techniques**, McGraw-Hill, New York, 1950
3. Barnes and Ralph M., **Motion and Time Study**, John Wiley and Sons, New York, 1958

FS3008	FASHION PHOTOGRAPHY	L T P C 3 0 0 3
UNIT I	PRINCIPLES OF PHOTOGRAPHY	9
Photography – basics – general principles – rules; Indoor photography – requirements and methods – lighting techniques – methods and equipment – advantages and disadvantages; Outdoor photography – methods – lighting techniques – methods and equipment – comparison of outdoor photography with indoor photography		
UNIT II	CAMERAS	9
Definition of camera – parts of camera- classification and types of camera – applications, advantages and disadvantages of individual types		
UNIT III	PHOTOGRAPHY IN DIFFERENT FIELDS	9
Photography techniques and equipment for different fields; Modelling, newspaper, magazines – occasions – fashion shows		
UNIT IV	DEVELOPING AND PRINTING	9
Definition of developing – different techniques in developing; Printing – definitions – methods of printing for black-and-white and colour photographs		
UNIT V	VIDEO PHOTOGRAPHY	9
Photography using digital cameras – video photography –image mixing – application of computers in photography		

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Miller W.R., **Basic Industrial Arts, Plastics, Graphics Arts, Power Mechanics, Photography**, McKnight Publishing Company, Illinois, 1978
2. John Hedge, **Photography Course**, John Hedge Co, 1992

FS3009	FUNCTIONAL CLOTHING	L T P C 3 0 0 3
UNIT I	INTRODUCTION	8
Functional design of textiles; properties of textiles for specific functions: structural, aesthetic, functional properties – comfort and fit		
UNIT II	MEDICAL WEAR	8
Classification of medical textiles and their functions – Textile materials used for implants and non-implants –Textiles for extracorporeal devices- Healthcare and hygiene products		
UNIT III	PROTECTIVE WEAR	9
Materials used, requirements and functions of flame resistant protective clothing-chemical protective clothing- mechanical protective clothing – electrical protective clothing and radiation protection		

UNIT IV SPORTS WEAR 10

Clothing requirements, developments of functional fibres, yarns and fabrics suitable for sportswear application and its properties; Footwear Clothing - Fabric requirements, finishing adaptability and evaluation methods

UNIT V SMART AND INTELLIGENT TEXTILES 10

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

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Horrocks A. R. and Anand S. C, **Handbook of Technical Textiles**, The Textile Institute, Woodhead Publications, Cambridge, UK, 2000
2. Adanur S., **Wellington Sears Handbook of Industrial Textiles**, Technomic Publishing Co. Lanchester, USA, 1995

REFERENCES:

1. Vigo T. L., **Intelligent Fibres**, Journal of Textile Institute 1999, 90, Part 3, Textile Institute
2. Anand S., **Medical Textiles**, Textile Institute, UK, 1996
3. Sanjay Gupta, **Smart Textiles – Their Production and Marketing Strategies**, Bhumatica Printers, New Delhi, 2000
4. Tao X., **Smart Fibres, Fabric and Clothing**, Textile Institute, Woodhead Publishing Limited, Cambridge, 2001

**FS3010 HOME TEXTILES L T P C
3 0 0 3**

UNIT I INTRODUCTION 9

Introduction to home textiles – definition and classification of home textiles – woven, nonwoven and knitted fabrics; eco-friendly home textiles; special finishes and surface ornamentation on home textile products; Indian home textiles industry and its future prospects; latest development in home textile products

UNIT II FURNISHINGS 9

Types of furnishings used for different interiors- living room dining room, kitchen, bed room, bathroom; factors influencing the selection of home furnishings for different interiors, usage of furnishing for different workplaces

UNIT III FLOORING 9

Floor coverings – hard floor covering-types, features and end use, soft floor covering types, features and end use and resilient floor covering types, features and end use; factors influencing the selection of different floor covering and its maintenance

UNIT IV DOORS AND WINDOWS 9

Different types of doors and windows and hardware used – curtains and draperies – types, choice of fabrics, calculating the material required for curtains, construction of curtains for different types of windows and doors, Method of finishing draperies

UNIT V**9**

Materials handling: objectives 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

TOTAL: 45 PERIODS**TEXT BOOKS**

1. Khanna. O. P., **Industrial Engineering and Management**, Danpat Rai and Sons, New Delhi, 1987
2. Ralph M. Barnes, **Motion and Time Study Design and Measurement of Work**, Seventh Edition, John Wiley and Sons, New York, 1980
3. David C. Alexander and Baur Mustafa Pulat, **Industrial Ergonomics - A Practitioner' Guide**, Institute Industrial Engineers, Prentice Hall Inc, USA, 1985

REFERENCES

1. James M. Apple, **Plant Layout and Materials Handling**, Third Edition, John Wiley and Sons, New York, 1997
2. Elwood S. Buffa, **Modem Production and Operations Management**, Wiley Eastern Ltd, New Delhi, 1991
3. George Kanawaty, **Introduction to Work Study**, International Labour Office 1987

FS3012**OPERATIONS RESEARCH****L T P C
3 0 0 3****UNIT I LINEAR PROGRAMMING TECHNIQUES****9**

Graphical and Simplex solution for maximizing and minimizing problems – A case of degeneracy in Simplex method – Post optimality analysis, Sensitivity Analysis, Parametric programming – Revised Simplex problem – Primal / Dual relationship – Goal programming – Application of linear programme.

UNIT II TRANSPORTATION AND ASSIGNMENT MODELS**9**

North / West corner method, Least-cost method, Stepping stone method, Vogel's approximate method, Modi method – Degeneracy, Imbalance matrix. Assignment model: Branch and Bound Technique, Hungarian method, Trans-shipment problem, Travelling salesmen proble

UNIT III DYNAMIC PROGRAMMING AND PROJECT SCHEDULING**9**

Dynamic programming models, Deterministic case. Maximization and Minimization problem. Use of the D.P. techniques to solve the L.P. problems. C.P.M. and P.E.R.T. for Project Scheduling. Resource leveling, crashing, Resource planning.

UNIT IV INVENTORY ANALYSIS AND CONTROL**9**

Introduction, Functions of Inventory, Economic Order Quantity (EOQ), Inventory models – Simple EOQ model, EOQ model with Stock-out allowed, Inventory model under risk. ABC Analysis, Pareto Analysis, Material Requirement Planning (MRP), Manufacturing Resource Planning (MRP2), Operating cycle.

UNIT V DECISION AND QUEUING THEORY**9**

Decision under risk, Decision trees, Decision under uncertainty, Decision-making with utilities. Use of simulation technique for decision making. Optimal simulation run. Introduction to queuing theory, Structures of queues, Poisson arrival and exponential service times, Applications of queuing theory.

TOTAL: 45 PERIODS**TEXTBOOKS:**

1. Hillier and Lieberman, "Introduction to Operations Research", 7th edition, McGraw-Hill International Edition, USA, 2001.
2. U.K. Srivastava., G.V. Shenoy, S.C. Sharma, "Quantitative Techniques for Managerial Decision", 2nd edition, Prentice Hall, New Delhi, 2001.

REFERENCES:

1. R. Panneerselvam, "Operations Research", Prentice Hall, New Delhi, 2002.
2. P.C. Tulsin, "Quantitative Techniques: Theory and Problems", Prentice Hall, New Delhi, 2002.
3. Ronald L. Rardin, "Optimization in Operations Research", Prentice Hall, New Delhi, 1998.
4. Hamdy A. Taha, "An Introduction to Operations Research, 6th edition, Prentice Hall, New Delhi, 2000.
5. P.K. Gupta, D.S. Hira, "Problems in Operations Research", S. Chand & Company, New Delhi, 2002.
6. C.K. Mustafi, "Operations Research: Methods and Practice", New Age International (P) Ltd. Publisher, Chennai, 2000.

FS3013**RETAILING AND BRAND MANAGEMENT****L T P C
3 0 0 3****UNIT I INTRODUCTION TO RETAILING AND RETAIL MODELS****9**

Introduction to Retailing Business models in retail, Theories of retail development, Concept of life cycle in retail, General Merchandise retailers, Retail Organisation structure

UNIT II MARKET SEGMENTATION AND RETAILING STRATEGY, PLANNING**9**

Market segmentation - Criteria and approach, Selection of Promotion mix, Market Targeting, Retail Franchising, Retail store locations; Need for studying consumer behaviour, Factors influencing retail shoppers

UNIT III CONSUMER BEHAVIOR AS AN INDIVIDUAL**9**

Consumer behaviour – concepts – Consumer needs and motives – personality and consumer behaviour – consumer perception – learning – consumer attitudes – attitude formation and change – communication and persuasion – self image – life style analysis

UNIT IV CONSUMER DECISION PROCESS AND POST PURCHASE BEHAVIOUR**9**

Personal influence and opinion leadership – consumer decision making process – models of consumer decision process – Nicosia - Howard Sheth and Engel-Kollat model- post purchase behaviour – Consumer expectation and satisfaction – managing dissonance – consumer loyalty – types of loyalty programmes

UNIT V BRAND INTRODUCTION, BRAND BUILDING AND SUCCESS 9

Brand- definition and concept, brand image and imagery, Brand benefits and brand value; Retail Brand Building, Brand Success – Strategic Product success; Brand association and creating a brand niche

TOTAL: 45PERIODS

TEXT BOOKS:

1. Chetan Bajaj and Nidhi V. Srivastava, **Retail Management**, Oxford University Press, UK, 2005
2. Henry Assael, **Consumer Behaviour**, Cengage Learning, New Delhi,2007
3. Mathur U. C., **Brand Management - Text and Cases**, Macmillan, New Delhi ,2006

REFERENCES:

1. Gibson G. Vedamani, **Retail Management**, Jaico Publishing House, Mumbai, 2004
2. Barry Berman and Joel R .Evans, **Retail Management: A Strategic Approach**, Prentice Hall of India,2007
3. Roger Blackwell et al, **Consumer Behaviour: An Asia Pacific Approach** , First Edition, Cengage Learning, New Delhi ,2007

**FS3014 LOGISTICS AND SUPPLY CHAIN MANAGEMENT L T P C
3 0 0 3
9**

UNIT I

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, organizational factors, facility factors, software factors, technical data, information system factors, availability factors, economic factors, effectiveness factors – all of these related to 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)

UNIT II 9

Logistics management: logistics planning, development of a work breakdown structure (WBS), scheduling of logistics tasks, cost estimating and control – activity-based costing and logistics; Organisation for logistics, management and control, reverse logistics process; Practices in the apparel industry; analysing 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 and obstacles

UNIT III 9

Planning demand and supply in a supply chain: demand forecasting in a supply chain, aggregate planning, planning supply and 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

UNIT IV 9

Role of IT in supply chain: supply chain information technology in practice; Coordinating a supply chain and the role of e-business: lack of supply chain coordination and the bullwhip effect; Obstacles to coordination in a supply chain, managerial levers to achieve coordination, EDI; Building strategic partnerships and 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

UNIT V

9

Global logistics: logistics in a global economy, views of global logistics, global operating levels, interlinked global economy, global supply chain; Just-in-time and quick response logistics the Japanese philosophy - quick response logistics – vendor-managed inventory - logistics information, systems logistics

TEXT BOOKS:

1. Sunil Chopra and Peter Meindl, **Supply Chain Management** (Strategy, Planning and Operation), Prentice Hall, New Jersey, 2001
2. Benjamin S. Blanchard, **Logistics Engineering and Management**, Inc. Upper Saddle River, New Jersey, 2003
3. Donald J. Bowersox and David J. Closs, **Logistical Management - The Integrated Supply Chain Process**, Prentice Hall, 2002

REFERENCES:

1. Martin Christopher, Chap.7 of **Logistics and Supply Chain Management - Strategies for Reducing Cost and Improving Service**, Second Edition, Kluwer Academic Publishers, USA, 2003
2. Douglas M. Lambert, James R. Stock and Lisa M. Ellram, **Fundamentals of Logistics Management**, Prentice Hall, New Jersey, 2002,
3. **Management**, Prentice Hall, New Jersey, 2002,

FS3015

VISUAL MERCHANDISING

L T P C
3 0 0 3

UNIT I

9

Fashion business – segment of fashion industry; merchandising – types and functions; Visual merchandising - introduction, concepts and role, importance of store planning and utilising basic visual merchandising techniques; role of atmosphere in garment retailing – immediate effects and simulation types, role of visual merchandisers in garment retailing

UNIT II: STORE EXTERIOR AND INTERIOR

9

Store exterior – marquee, facade, exterior display, surrounding stores and displays; Store interior – store atmospheric, aesthetic, execution of store lay out - selection of display locations, lifts, staircase, elevators, utilisation of store space; Lighting - lights types, selection, advantages and disadvantages; Music; Using effective graphics and signage for theme, campaign and promotional aspects; Display composition: elements and principles of design, tools and materials

UNIT III

9

Factors considered in organising effective display – balance, rhythm, proportion, texture, harmony and emphasis. Store layout planning- grid, race track, freeform – direction of flow and planogram; Seasonal and trend decision for point of emphasis – creativity in display; Planning of assortment, theme, ensemble, racks, shelves, bins, etc. and balance of display in a show room

UNIT IV

9

Application of colour schemes, colour psychology, creating mood by colour; Theme, interior and exterior displays used in garment retail outlet, boutique and haute couture, accessories show rooms, mannequins, fabric and paper displays; Optimise apparel assortments; Wall as retail selling tool – types of materials used merchandise display and effective wall planning

UNIT V**9**

Virtual store planning, assortment planning; Information technology in data management, data sharing, assortment planning and inventory management

TOTAL: 45 PERIODS**TEXT BOOKS:**

1. Mike Easey, **Fashion Marketing**, Blackwell Science, London, 2000
2. Maurice J. Johnson and Evelyne C. Moore, **Apparel Product Development**, Prentice Hall Inc. New Jersey, 2001

REFERENCES:

1. Marian L. Davis, **Visual Design in Dress**, Prentice Hall Inc., Third Edition, 1996
2. Elaine Stone, Mary D. Troxell and Beatrice Judelle, **Fashion Merchandising**, McGraw-Hill Inc., Fourth Edition ,USA, 2000

FS3016**ENTREPRENEURSHIP DEVELOPMENT****L T P C
3 0 0 3****UNIT I INTRODUCTION****9**

Definition of an entrepreneur - entrepreneurship management and ownership; contrast entrepreneurship with management; characteristics of an entrepreneur, role of an entrepreneur in industrial development; starting a new business, business planning / strategic planning and strategic management, site selection and layout

UNIT II ESTABLISHING A NEW VENTURE**9**

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 and national level; products identification in various fields, causes of industrial disputes, machinery for settlement of disputes, idea of risk management

UNIT III THE BUSINESS PLAN DEVELOPMENT**9**

Business plan- need for a business plan, structure of a business plan, 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; differentiation between feasibility study and business plan, identifying requirements for venture feasibility

UNIT IV ENTERPRISE MANAGEMENT**9**

Mechanisms of and requirements for growth of a venture, effective organizational structures, operational challenges for entrepreneurs, alternative operations / strategies for adapting an organization to changes in the marketplace, entrepreneurial and traditional corporate career paths, organizational structure relevant to small organizations, procedures involved in the management of man, machine, material and methods of production and operation

UNIT V FINANCING BUSINESS**9**

Type of capital, importance of financial management in the context to SSI, sources of debt financing, sources of equity financing ,financial control; marketing products - creating the marketing plan, pricing for profit, creative advertising and promotion.

Entrepreneurship and business environment in India; case studies: overview and analysis of successful entrepreneurs (such as Jamshedji Tata, G. D. Birla, Aditya Birla, Dhirubhai Ambani, Azim Premji, N. R. Narayana Murthy, etc.);

TOTAL: 45 PERIODS

TEXTBOOKS:

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

REFERENCES:

1. Sally Jones, **Service Management and Operations**, Prentice Hall, New Jersey, 1999
2. Sally Jones , **Principles of Taxation for Business and Investment Planning**, McGraw Hill, USA, 1997
3. Barjoyai Bardai, **Indian Tax Policy**, Pelanduk Publication, Malaysia, 1996
4. Anantharaman V., **Indian Industrial Relations: Law and Practice**, UPM Press, Serdang, 1997 Success, Fortune 500, Business Today, Business World (Maga