(Common to all B. E. / B. Tech. Degree Programmes except B. E. – Marine Engineering)

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   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)
   7. B.Tech. Plastics Technology
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AIM
To encourage students to actively involve in participative learning of English and to help them acquire Communication Skills.

OBJECTIVES
- To help students develop listening skills for academic and professional purposes.
- To help students acquire the ability to speak effectively in English in real-life situations.
- To inculcate reading habit and to develop effective reading skills.
- To help students improve their active and passive vocabulary.
- To familiarize students with different rhetorical functions of scientific English.
- 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
4. and predicting the content – Reading advertisements and interpretation.
5. Writing extended definitions – Writing descriptions of processes – Writing paragraphs based on discussions – Writing paragraphs describing the future.

UNIT II 12

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

UNIT IV
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
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 BOOK
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

Extensive Reading:

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.
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

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

UNIT V  LAPLACE TRANSFORM  12

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

REFERENCES
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 Tc 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
2. Charles P. Poole and  Frank J.Ownen, 'Introduction to Nanotechnology', Wiley
   India(2007) (for Unit V)

REFERENCES
3. Palanisamy P.K, ‘Materials science’, Scitech publications(India) Pvt. LTD., Chennai,
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
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 - Fe²⁺ vs dichromate and precipitation – Ag⁺ vs Cl⁻ titrations) and conduct metric titrations (acid-base – HCl vs, NaOH) titrations,

UNIT II  CORROSION AND CORROSION CONTROL

UNIT III  FUELS AND COMBUSTION

UNIT IV  PHASE RULE AND ALLOYS

UNIT V  ANALYTICAL TECHNIQUES

TOTAL: 45 PERIODS
TEXT BOOKS

REFERENCES

ME2151 ENGINEERING MECHANICS

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 BASICS & STATICS OF PARTICLES

UNIT II EQUILIBRIUM OF RIGID BODIES

UNIT III PROPERTIES OF SURFACES AND SOLIDS
UNIT IV  DYNAMICS OF PARTICLES  

UNIT V  FRICTION AND ELEMENTS OF RIGID BODY DYNAMICS  
Translation and Rotation of Rigid Bodies – Velocity and acceleration – General Plane motion.

TEXT BOOK

REFERENCES

EE2151  CIRCUIT THEORY  
(LT Practical)
(Common to EEE, EIE and ICE Branches)

UNIT I  BASIC CIRCUITS ANALYSIS  

UNIT II  NETWORK REDUCTION AND NETWORK THEOREMS FOR DC AND AC CIRCUITS  
Network reduction: voltage and current division, source transformation – star delta conversion.
Thevenins and Novton & Theorem – Superposition Theorem – Maximum power transfer theorem – Reciprocity Theorem.

UNIT III  RESONANCE AND COUPLED CIRCUITS  

UNIT IV  TRANSIENT RESPONSE FOR DC CIRCUITS  
Transient response of RL, RC and RLC Circuits using Laplace transform for DC input and A.C. with sinusoidal input.
UNIT V  ANALYSING THREE PHASE CIRCUITS  12
Three phase balanced / unbalanced voltage sources – analysis of three phase 3-wire and 4-wire circuits with star and delta connected loads, balanced & unbalanced – phasor diagram of voltages and currents – power and power factor measurements in three phase circuits.

TOTAL : 60 PERIODS

TEXT BOOKS

REFERENCES

EC2151 ELECTRIC CIRCUITS AND ELECTRON DEVICES L T P C
(For ECE, CSE, IT and Biomedical Engg. Branches) 3 1 0 4

UNIT I  CIRCUIT ANALYSIS TECHNIQUES  12

UNIT II  TRANSIENT RESONANCE IN RLC CIRCUITS  12

UNIT III  SEMICONDUCTOR DIODES  12

UNIT IV  TRANSISTORS  12
Principle of operation of PNP and NPN transistors – study of CE, CB and CC configurations and comparison of their characteristics – Breakdown in transistors – operation and comparison of N-Channel and P-Channel JFET – drain current equation – MOSFET – Enhancement and depletion types – structure and operation – comparison of BJT with MOSFET – thermal effect on MOSFET.
UNIT V  SPECIAL SEMICONDUCTOR DEVICES (Qualitative Treatment only)  12
Tunnel diodes – PIN diode, varactor diode – SCR characteristics and two transistor
equivalent model – UJT – Diac and Triac – Laser, CCD, Photodiode, Phototransistor,
Photoconductive and Photovoltaic cells – LED, LCD.

TEXT BOOKS
2. S. Salivahanan, N. Suresh kumar and A. Vallavanraj, “Electronic Devices and
(2008).

REFERENCES

GE2151    BASIC ELECTRICAL AND ELECTRONICS ENGINEERING   L T P C
(Common to branches under Civil, Mechanical and Technology faculty)  4 0 0 4

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

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

TOTAL : 60 PERIODS

TEXT BOOKS

REFERENCES

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(Common to branches under Electrical and I & C Faculty)

A – CIVIL ENGINEERING

UNIT I  SURVEYING AND CIVIL ENGINEERING MATERIALS  15


UNIT II  BUILDING COMPONENTS AND STRUCTURES  15
Foundations: Types, Bearing capacity – Requirement of good foundations.


TOTAL: 30 PERIODS

B – MECHANICAL ENGINEERING

UNIT III  POWER PLANT ENGINEERING  10
UNIT IV  I C ENGINES
Internal combustion engines as automobile power plant – Working principle of Petrol and Diesel Engines – Four stroke and two stroke cycles – Comparison of four stroke and two stroke engines – Boiler as a power plant.

UNIT V  REFRIGERATION AND AIR CONDITIONING SYSTEM

REFERENCES

GE2155  COMPUTER PRACTICELABORATORY – II

<table>
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<th>LIST OF EXPERIMENTS</th>
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<tr>
<td>1. UNIX COMMANDS 15</td>
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<td>Study of Unix OS - Basic Shell Commands - Unix Editor</td>
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<td>2. SHELL PROGRAMMING 15</td>
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<td>Simple Shell program - Conditional Statements - Testing and Loops</td>
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<td>3. C PROGRAMMING ON UNIX 15</td>
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<td>Dynamic Storage Allocation-Pointers-Functions-File Handling</td>
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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
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.
5. Spectrometer dispersive power of a prism.
6. Determination of Young’s modulus of the material – uniform bending.

- 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 BaCl₂ vs Na₂SO₄
4. Potentiometric Titration (Fe²⁺ / KMnO₄ or K₂Cr₂O₇)
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.
10. Creation of 3-D models of simple objects and obtaining 2-D multi-view drawings from 3-D model.

TOTAL: 45 PERIODS

**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.

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**EE2155**  
**ELECTRICAL CIRCUIT LABORATORY**

(Common to EEE, EIE and ICE)

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**LIST OF EXPERIMENTS**

1. Verification of ohm’s laws and kirchoff’s laws.
2. Verification of Thevenin’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.
10. Frequency response of single tuned coupled circuits.

TOTAL: 45 PERIODS

**EC2155**  
**CIRCUITS AND DEVICES LABORATORY**

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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

TOTAL: 45 PERIODS
ENGLISH LANGUAGE LABORATORY (Optional)  L  T  P  C
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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

LAB REQUIREMENTS
1. Teacher – Console and systems for students
2. English Language Lab Software
3. Tape Recorders.
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  FOURIER SERIES  9 + 3

UNIT II  FOURIER TRANSFORMS  9 + 3

UNIT III  PARTIAL DIFFERENTIAL EQUATIONS  9 + 3
Formation of partial differential equations – Lagrange’s linear equation – Solutions of standard types of first order partial differential equations - Linear partial differential equations of second and higher order with constant coefficients.

UNIT IV  APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS  9 + 3
Solutions of one dimensional wave equation – One dimensional equation of heat conduction – Steady state solution of two-dimensional equation of heat conduction (Insulated edges excluded) – Fourier series solutions in cartesian coordinates.

UNIT V  Z -TRANSFORMS AND DIFFERENCE EQUATIONS  9 + 3

LECTURES: 45  TUTORIALS : 15  TOTAL : 60 PERIODS

TEXT BOOKS

REFERENCES
AIM
• The aim of this course is to create awareness in every engineering graduate about the importance of environment, the effect of technology on the environment and ecological balance and make them sensitive to the environment problems in every professional Endeavour that they participates.

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

UNIT I ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY
Definition, scope and importance of environment – need for public awareness - 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 II ENVIRONMENTAL POLLUTION
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 municipal solid 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 III NATURAL RESOURCES
Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. case studies – Land
resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. 
Field study of local area to document environmental assets – river / forest / grassland / hill / mountain.

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT 7 

UNIT V HUMAN POPULATION AND THE ENVIRONMENT 6 

TOTAL: 45 PERIODS

TEXT BOOKS:

REFERENCES BOOKS:
UNIT I  INTRODUCTION TO ORGANIC CHEMISTRY  12

UNIT II  CARBOHYDRATES  12

UNIT III  ORGANO METALLIC COMPOUNDS HETEROCYCLIC COMPOUNDS  12
Grignard reagents and their synthetic utility – Organo Silicon compounds. heterocyclic compounds - Furan, Thiophone, Pyrrole, Pyridine and indole – Their important derivatives.

UNIT IV  OILS, FATS AND WAXES AMINO ACID AND PROTEINS  12

UNIT V  DYSES AND DYEING  12
Synthesis of Methyl orange, Methyl red and Congo red, Malachite green, Para Rosanilin Alizarin, Phthalein dyes – Eosin preparation. Introduction to Natural and Reactive dyes.Classification of dyes and intermediates such as azines, oxazines, thiazine, acridine, thioazole, eqinoline, cyanide dyes, di phenyl and tri phenyl methane dyes

TOTAL : 60 PERIODS

REFERENCES
UNIT I POLYMERIZATION 12

UNIT II POLYMER PRODUCTION 12
Properties and applications: Polyester (PET, PBT, PTT) and Polyamides (Nylon 6, Nylon 6, 6) Polypropylene, Poly (acrylonitrile) (Acrylic and Modacrylic), Polyurethane, Polyethylene (LDPE, HDPE), Poly(vinyl chloride) PVC, Poly (tetrafluoroethylene) PTFE.

UNIT III REGENERATED CELLULOSE AND PROTEIN 12
Manufacture of Viscose, Cuprammonium and Acetate rayon, Modified high wet modulus—Polynosic, Lyocell—Super high wet modulus. Regenerated protein:

UNIT IV CHARACTERIZATION OF POLYMERS 12
Degree of Polymerization, different average molecular Weights (Number, Weight and Z-average), Determination of weight average by Ling Scattering, Number Average by End Group Analysis, Gel Permeation Chromatography and Osmometry and Viscosity Average by Ubbelhode viscometer. Thermal characterization of polymers: Principles, methods, Interpretation of DSC, TGA and DTGA results.

UNIT V POLYMER PROCESSING AND REUSE OF POLYMERS 12

LECTURE : 45 TUTORIAL : 15 TOTAL : 60 PERIODS

REFERENCES

UNIT II Dye intermediates
Classification of dyes and intermediates, colour and chemical constitution viz, azines, oxazines, thiazines, xanthine, acridine, thazole, eqinoline, cyanide dyes. Diphenyl and triphenyl methane dyes.

UNIT III Synthesisation
Unit processes in organic synthesis such as halogenation, nitration, Sulphonation, production esterification, hydroxylation, and diazotisation with suitable examples

UNIT IV Aromatic intermediates
Systematic study of important intermediates from benzene, chlorobenzene, nitrobenzene, aniline, phenol, salicylic acid.

UNIT V Dyes
Anthraquinone vat dyes, indigoid and thioindigoid dyes, solubilised vat dyes, sulphur colour, phthalocyanines, reactive dyes, disperse dyes. Fluorescent brightening and blueing agents – their chemistry and preparation.

REFERENCES
UNIT I GINNING, OPENING AND CLEANING
Various types of ginning, ginning performance. Objects of opening and cleaning. Blending Blow room machines, Blow room line for cotton, man-made fibres and blends. Objectives and working of semi-high production and high production card.

UNIT II FIBRE DRAFTING
Objectives and working of draw frame, various drafting systems; speed frame, bobbin and flyer lead roving process, and combing, sequence and timing of operations in combing, types of feeding, methods of lap preparation; stop motions, settings and speeds.

UNIT III YARN SPINNING
Yarn production by ring spinning, drafting system, cop building motions; condensed yarn spinning; rotor spinning, economic benefits, mechanism of yarn formation; friction spinning, yarn formation process, merits and demerits, open end and core-sheath type friction spun yarns and air jet spinning, principles and methods; ply yarn production, wrap spinning, double rove spinning, core yarn spinning, twistless and self-twisting spinning.

UNIT IV WEAVING PREPARATION
Winding, parallel, cross and precision winding, clearer, knotters and splicers, cheese and cone winding; warping, beam and sectional warping; sizing; machines, size preparation, drying, single end sizing and drawing in, working principle, manual, semiautomatic and automatic machines.

UNIT V WEAVING AND KNITTING

LECTURE: 45 TUTORIAL: 15 TOTAL: 60 PERIODS

REFERENCES
List of Experiments

1. Estimation of the Efficiency of the wetting agent.
2. Evaluation of the oxidizing agent.
3. Evaluation of the reducing agent.
4. Evaluation of the dispersing agent.
6. Analysis of oils and soaps.
7. Evaluation of the inorganic substances in Textile processing.
8. Identification of dye powder.
9. Identification of the dye in the dyed fabric
10. Estimation of percentage purity of the dye solution.
11. Evaluation of the finishing chemicals

TOTAL : 45 PERIODS

List of Experiments

Yarn Manufacture
1. Sketching the various parts of blow room and card indicating the passage of material giving the settings and speeds for the processing of long/medium/short stapled fibres.
2. Drawing the passage of material through a draw frame with 4/4 drafting system and 4/5 drafting system and giving the setting for cotton of different staple length.
3. Give the passage of material through the comber with settings for increasing comber water.
4. Sketching the building mechanism indicating change places for altering the coils per inch in the bobbin.
5. Estimating the draft, intermediate draft and draft constant front roller delivery and production of the ring frame.

Fabric Manufacture
6. Assembling and setting to time the dismantled parts of the shedding mechanism including the top-reversing device.
7. Assembling and setting to time the dismantled parts of cone over pick mechanism.
8. Setting the crank and sley and calculating the sley eccentricity.
9. Assembling and setting to time the dismantled parts of 7 wheel take-up motion.
10. Dismantling and assembling the parts of Negative let-off mechanism with back rest settings.
11. Sketching the various parts of simple knitting machines.

TOTAL : 45 PERIODS
### S.No List of Experiments
1. Identification of longitudinal & cross sectional view of cellulosic fibers
2. Identification of longitudinal & cross sectional view of Protein fibers
3. Identification of longitudinal & cross sectional view of Synthetic fibers
4. Identification of burning behavior of Cellulosic fibres
5. Identification of burning behavior of Protein fibers
6. Identification of burning behavior of Synthetic fibers
7. Determination of Moisture Regain of Cellulosic fibres
8. Determination of Moisture Regain of Protein fibres
9. Determination of Moisture Regain of Synthetic fibres
10. Determination of Density of Fibres
11. Identification of Cellulosic fibre by Staining Test
12. Identification of Protein fibre by Staining Test
13. Identification of Synthetic fibre by Staining Test
14. Identification of Cellulosic fibres by solvent method
15. Identification of Protein fibres by solvent method
16. Identification of Synthetic fibres by solvent method

**TOTAL : 45 PERIODS**

### MA3211 PROBABILITY AND STATISTICS

**AIM:**
This course aims at providing the required skill to apply the statistical tools in engineering problems.

**OBJECTIVES:**
- The students will have a fundamental knowledge of the concepts of probability.
- Have knowledge of standard distributions which can describe real life phenomenon.
- Have the notion of sampling distributions and statistical techniques used in management problems.

**UNIT I RANDOM VARIABLES**
Discrete and Continuous random variables – Moments – Moment generating functions – Binomial, Poisson, Geometric, Uniform, Exponential, Gamma, Weibull and Normal distributions - Functions of a random variable.

**UNIT II TWO-DIMENSIONAL RANDOM VARIABLES**
Joint distributions – Marginal and Conditional distributions – Covariance – Correlation and Linear regression – Transformation of random variables – Central limit theorem (for independent and identically distributed random variables).
UNIT III TESTING OF HYPOTHESIS 9 + 3

UNIT IV DESIGN OF EXPERIMENTS 9 + 3
Completely randomized design – Randomized block design – Latin square design - 22 - factorial design.

UNIT V STATISTICAL QUALITY CONTROL 9 + 3
Control charts for measurements (X and R charts) – Control charts for attributes (p, c and np charts) – Tolerance limits - Acceptance sampling.

T : 45 + 15 ,TOTAL : 60 PERIODS

TEXT BOOKS

REFERENCES

TC3220 PHYSICAL CHEMISTRY L T P C 3 0 0 3

UNIT I ELECTROCHEMISTRY 9

UNIT II CHEMICAL KINETICS 9
UNIT III PHASE RULE
Definition – Derivation – Application of phase rule to water system – Thermal Analysis – Cooling curves – Two Component system – Eutectic and compound formation.

UNIT IV ADSORPTION AND CATALYSIS
Physical and chemical adsorption – Types of adsorption isotherms, BET method, Gibbs equation, Homogeneous catalysis – Heterogeneous catalysis, acid – base catalysis, Enzyme catalysis – Applications of catalysis in industries.

UNIT V COLLOIDS

REFERENCES
3. Kund and Jain Physical Chemistry, S. Chand and Company, Delhi, 1996

TOTAL : 45 PERIODS

TC3213 INSTRUMENTATION AND MICRO PROCESSORS L T P C
3 0 0 3

UNIT I INTRODUCTION

UNIT II MICROPROCESSOR

UNIT III INTRODUCTION TO MEASUREMENT
UNIT IV STRAIN GAUGES AND MEASUREMENT

UNIT V TEXTILE SPECIFIC INSTRUMENTATION
Speed measurement and event counting using photo electric and reluctance principles – Proximity sensors. Instrumentation specific to Textile processing industry. Indicating and recording devices – Basic analog and digital meters – Standards and calibration. Cathode ray oscilloscopes and xy plotters and digital printers and plotters – magnetic disc and tape storage – Data loggers.

TOTAL : 45 PERIODS

REFERENCES

TC3214 PREPARATION OF TEXTILES FOR COLORATION

UNIT I SINGEING & DESIZING

UNIT II MERCERISATION
UNIT III  SCOURING

UNIT IV  BLEACHING

UNIT V  DEVELOPMENTS
Developments in grey preparation – combined processing enzymatic scouring & bleaching, cold bleaching; prograde process (liquid ammonia mercerization) Developments in desizing, Scouring, Bleaching and mercerizing, plasma based preparation, ozone bleaching.

TOTAL : 45 PERIODS

REFERENCES
3. Charles Tomasno, Chemistry and Technology of fabric Preparation and Finishing, North Carolina State University, USA, 1992

TC3215  PHYSICAL TESTING OF TEXTILE MATERIALS  L T P C
3 0 0 3

UNIT I  INTRODUCTION
UNIT II  STATISTICAL EVALUATION  9
Measures of central tendency and dispersion, Determination of number of tests, Types of error, Sources of error, Design of experiments – Factorial designs, Response surface designs, Taguchi designs. Repeatability, Reproducibility.

UNIT III  FIBRE QUALITY EVALUATION  9

UNIT IV  YARN QUALITY EVALUATION  9

UNIT V  FABRIC QUALITY EVALUATION  9

TOTAL : 45 PERIODS

REFERENCES

TT3216  STRUCTURE AND PROPERTIES OF FIBRES  L T P C
                      3 0 0 3

UNIT I  STRUCTURE OF FIBRES  9
UNIT II MOISTURE ABSORPTION PROPERTIES OF FIBRES

UNIT III MECHANICAL PROPERTIES OF FIBRES

UNIT IV OPTICAL AND FRICTIONAL PROPERTIES

UNIT V ELECTRICAL AND THERMAL PROPERTIES

TOTAL : 45 PERIODS

REFERENCES

TC3218 WET PROCESSING PREPARATION LABORATORY

LIST OF EXPERIMENTS

1. Determination of starch content in Enzyme desizing.
2. Determination of residual starch in acid desizing
3. Determination of scouring loss.
5. Comparison between bleached and bleached & optical brightened treated sample for whiteness and reflectance value.
6. Determination of the yellowing of hypochlorite bleached (soured/not soured, but washed) fabrics.
7. Effect of time/temperature in bleaching with hypochlorite (whiteness and strength loss).
8. Effect of pH/available chlorine in bleaching with hypochlorite (whiteness and strength loss)
9. Scouring & Bleaching of knitted cotton fabrics in winch
10. Scouring & Bleaching of woven blend fabrics in jigger.
12. Degumming & Bleaching of silk.
13. Scouring and Bleaching of wool using hydrogen peroxide.

TOTAL : 45 PERIODS

TC3219 TEXTILE PHYSICAL TESTING LABORATORY

LIST OF EXPERIMENTS

1. Measurement of Fibre Length.
8. Measurement of a) Fabric Tensile Strength. b) Fabric Bursting strength
10. Determination of GSM
11. Determination of twist

TOTAL : 45 PERIODS
TT3301  CHEMISTRY OF TEXTILE AUXILIARIES  L T P C  3 0 0 3

UNIT I  9
Auxiliaries: Importance and functions; Surfactants: Mode of action and classification of surfactants – cationic, anionic, nonionic and amphoteric surfactants.

UNIT II  9
Auxiliaries associated with De-sizing, scouring, Bleaching of cellulosic fibres, Protein fibres and synthetic fibres.

UNIT III  9
Auxiliaries associated with Dyeing with Direct Dyes, Reactive, Vat, Azoic colors, Sulphur dyes, Acid dyes, Metal complex dyes, Basic and Disperse dyes.

UNIT IV  9
Auxiliaries associated with printing: Direct Style of Printing, Discharge style of Printing, Resist style of printing.

UNIT V  9
Auxiliaries used in Resin Finishing, Stiff finishing, soft finishing, Water repellent, Water Proof, Flame retardant, Soil release.

TOTAL : 45 PERIODS

REFERENCES

TC3302  WET PROCESSING MACHINERY  L T P C  3 0 0 3

UNIT I  FIBRE AND YARN PROCESSING  9

UNIT II  FABRIC PROCESSING  9
UNIT III  PRINTING MACHINES AND DRYERS  9

UNIT IV  FINISHING MACHINES AND WASHERS  9

UNIT V  HOSIERY AND GARMENT PROCESSING  9

TOTAL : 45 PERIODS

REFERENCES

TC3303  THEORY OF DYEING AND COLOUR PHYSICS  L T P C
3 0 0 3

UNIT I  9

UNIT II  9

UNIT III  9
Colour perception, theories of colour vision, colour measurement
UNIT IV

UNIT V

REFERENCES

TOTAL : 45 PERIODS
REFERENCES

TC3305 DYEING OF PROTEIN TEXTILES L T P C
3 0 0 3

UNIT I

UNIT II

UNIT III
Reactive Dyes: Types of reactive dyes used for dyeing protein fibres – Type of chemical reactions involved in dyeing of wool and silk with reactive dyes – application of monochloro, dichloro triazine dyes on wool and silk – application of vinyl sulphone, difluoro, mono chloro primidyl dyes, bromo acrylamide dyes and bifunctional dyes on wool and silk. Striping and redyeing.

UNIT IV

UNIT V

TOTAL : 45 PERIODS
REFERENCES

TC3306 TECHNOLOGY OF PRINTING – I

UNIT I
9
Definition of printing – Difference between printing and dyeing – Pretreatment and Fabric requirements for printing – Design details of printing like repeat of design, squeegeees, bolting cloth – Ingredients in printing with functions and their concentration of usage – Classification thickeners – Requirements to be a good thickener – Brief study on thickeners like CMC, Sodium Alginate, Indalca, Guar gum and Kerosene emulsion paste – Synthetics thickeners.

UNIT II
9

UNIT III
9

UNIT IV
9
Preparation of knits and garments for printing, Khadi and Colour Khadi print, Plastic and Rubber print, Gold and Silver Prints on Hosiery by direct style method – Flock printing on Hosiery.

UNIT V
9
A brief study on traditional methods of printing such as Tie and Dye style, Batik printing, IKAT Printing, Burnt out style printing, speckle printing. Crepon style of printing, conversion style of discharge printing.

TOTAL : 45 PERIODS
REFERENCES

TC3308 DYEING OF CELLULOSIC TEXTILE LABORATORY L T P C 0 0 3 2

S.No List of Experiments
2. Dyeing of cotton fabric with Azoic.
3. Dyeing of cotton fabric with Sulphur Colours and after treatments.
10. Dyeing with Remazols by Pad – Steam method.
12. Dyeing with Procion HE dyes on Winch – Hosiery fabrics
13. Stripping and Redyeing of Faulty dyeing (Azoic)
14. Stripping and Redyeing of Faulty dyeing (Reactie)
15. Effect of liquor ratio on the dyeing of cotton with direct dyes.
17. Effect of salt on the dyeing of cotton with direct dyes.
18. Effect of time on the dyeing of cotton with direct dyes.

TOTAL : 45 PERIODS

TC3309 DYEING OF PROTEIN TEXTILE LABORATORY L T P C 0 0 3 2

S.No Experiments
1. Dyeing of Wool with Direct Dyes.
2. Dyeing of Wool with Basic Dyes.
3. Dyeing of Wool with Metal Complex Dyes.
4. Dyeing of Wool with Acid Dyes.
5. Dyeing of Wool with Natural Dyes.
7. Striping and re-dyeing of wool.
8. Dyeing of silk with Direct Dyes.
9. Dyeing of silk with Basic Dyes.
10. Dyeing of silk with Metal Complex Dyes.
11. Dyeing of silk with Acid Dyes.
12. Dyeing of silk with Acid Dyes.
14. Striping and re-dyeing of silk.
15. Effect of pH on dyeing of wool/silk with acid dyes.
16. Effect of Electrolyte on dyeing of wool/silk with acid dyes.
17. Effect of Temperature on dyeing of wool/silk with acid dyes.
18. Effect of Liquor ratio and Time on dyeing of wool/silk with acid dyes.
19. Effect of Time on dyeing of wool/silk with acid dyes.

TOTAL: 45 PERIODS

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TC3310 SHADE MATCHING AND QUALITY CONTROL

Shade Matching

<table>
<thead>
<tr>
<th>S.No</th>
<th>Experiments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Self shade card preparation with direct dyes.</td>
</tr>
<tr>
<td>2.</td>
<td>Self shade card preparation with Reactive Cold Brand dyes.</td>
</tr>
<tr>
<td>3.</td>
<td>Self shade card preparation with Reactive Hot Brand dyes</td>
</tr>
<tr>
<td>4.</td>
<td>Self shade card preparation with Reactive Vinyl Sulphone dyes</td>
</tr>
<tr>
<td>5.</td>
<td>Preparation of compound shades using binary colours of Reactive Hot Brand Dyes</td>
</tr>
<tr>
<td>6.</td>
<td>Preparation of compound shades using tertiary colours of Reactive Remazol Dyes</td>
</tr>
<tr>
<td>7.</td>
<td>Matching of compound shades using binary colours of Reactive Hot Brand Dyes</td>
</tr>
<tr>
<td>8.</td>
<td>Matching of compound shades using tertiary colours of Reactive Remazol Dyes</td>
</tr>
<tr>
<td>9.</td>
<td>Prediction of recipe using computer colour matching system</td>
</tr>
<tr>
<td>10.</td>
<td>Correction recipe prediction from computer clolour matching</td>
</tr>
<tr>
<td>11.</td>
<td>Measurement of delta-E</td>
</tr>
</tbody>
</table>

Quality Control

<table>
<thead>
<tr>
<th>S.No</th>
<th>Experiments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Determination of different whiteness indices, yellowing indices of the bleached fabric.</td>
</tr>
<tr>
<td>3.</td>
<td>Wash fastness of dyed/printed samples.</td>
</tr>
<tr>
<td>4.</td>
<td>Light fastness of dyed/printed samples.</td>
</tr>
<tr>
<td>5.</td>
<td>Rubbing fastness of dyed/printed samples.</td>
</tr>
<tr>
<td>6.</td>
<td>Perspiration fastness of dyed/printed samples.</td>
</tr>
<tr>
<td>7.</td>
<td>Chlorine fastness of dyed/printed samples.( Spot Test)</td>
</tr>
</tbody>
</table>

TOTAL: 45 PERIODS
Globalisation has brought in numerous opportunities for the teeming millions, with more focus on the students’ overall capability apart from academic competence. Many students, particularly those from non-English medium schools, find that they are not preferred due to their inadequacy of communication skills and soft skills, despite possessing sound knowledge in their subject area along with technical capability. Keeping in view their pre-employment needs and career requirements, this course on Communication Skills Laboratory will prepare students to adapt themselves with ease to the industry environment, thus rendering them as prospective assets to industries. The course will equip the students with the necessary communication skills that would go a long way in helping them in their profession.

OBJECTIVES:

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

A. ENGLISH LANGUAGE LAB                                                                    (18 Periods)

1. LISTENING COMPREHENSION:                                                                               (6)
Listening and typing – Listening and sequencing of sentences – Filling in the blanks -
Listening and answering questions.

2. READING COMPREHENSION:                                                                                 (6)
Filling in the blanks - Close exercises – Vocabulary building - Reading and answering questions.

3. SPEAKING:                                                                                              (6)
Conversations: Face to Face Conversation – Telephone conversation – Role play activities (Students take on roles and engage in conversation)

B. DISCUSSION OF AUDIO-VISUAL MATERIALS                            (6 PERIODS)

(Samples are available to learn and practice)

1. RESUME / REPORT PREPARATION / LETTER WRITING                                                                 (1)
Structuring the resume / report - Letter writing / Email Communication - Samples.

2. PRESENTATION SKILLS:                                                                                   (1)
Elements of effective presentation – Structure of presentation - Presentation tools – Voice Modulation – Audience analysis - Body language – Video samples
3. **SOFTWARE SKILLS:**  
Time management – Articulateness – Assertiveness – Psychometrics – Innovation and Creativity - Stress Management & Poise - Video Samples

4. **GROUP DISCUSSION:**  
Why is GD part of selection process ? - Structure of GD – Moderator – led and other GDs - Strategies in GD – Team work - Body Language - Mock GD -Video samples

5. **INTERVIEW SKILLS:**  
Kinds of interviews – Required Key Skills – Corporate culture – Mock interviews- Video samples.

<table>
<thead>
<tr>
<th>II. Practice Session</th>
<th>(Weightage – 60%)</th>
<th>24 periods</th>
</tr>
</thead>
</table>
1. Resume / Report Preparation / Letter writing: Students prepare their own resume and report.  
2. **Presentation Skills:** Students make presentations on given topics.  
3. **Group Discussion:** Students participate in group discussions.  
4. **Interview Skills:** Students participate in Mock Interviews

**TEXT BOOKS**

**REFERENCES**

**LAB REQUIREMENT**
1. Teacher console and systems for students.
2. English Language Lab Software
3. Career Lab Software
## REQUIREMENT FOR A BATCH OF 60 STUDENTS

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Description of Equipment</th>
<th>Quantity required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Server</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o PIV system</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o 1 GB RAM / 40 GB HDD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o OS: Win 2000 server</td>
<td></td>
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<tr>
<td></td>
<td>o Audio card with headphones (with mike)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o JRE 1.3</td>
<td>1 No.</td>
</tr>
<tr>
<td>2.</td>
<td><strong>Client Systems</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o PIII or above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o 256 or 512 MB RAM / 40 GB HDD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o OS: Win 2000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Audio card with headphones (with mike)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o JRE 1.3</td>
<td>60 No.</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Handicam Video Camera (with video lights and mic input)</strong></td>
<td>1 No.</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Television - 29”</strong></td>
<td>1 No.</td>
</tr>
<tr>
<td>5.</td>
<td><strong>Collar mike</strong></td>
<td>1 No.</td>
</tr>
<tr>
<td>6.</td>
<td><strong>Cordless mikes</strong></td>
<td>1 No.</td>
</tr>
<tr>
<td>7.</td>
<td><strong>Audio Mixer</strong></td>
<td>1 No.</td>
</tr>
<tr>
<td>8.</td>
<td><strong>DVD Recorder / Player</strong></td>
<td>1 No.</td>
</tr>
</tbody>
</table>
UNIT I

UNIT II
Concept of Flame proof & flame retardancy, Concept of pyrolysis, Flame retardant finishes for cotton, Concept of waterproof and water repellent Finishes, Mildew proof finishes and Rot proof finishing. Durable & Semi durable and Temporary finishes, Anti microbial, Deodorant, Perfume, UV Protection finishes.

UNIT III

UNIT IV

UNIT V
Mechanism in the weight reduction of PET by using alkali ; Micro encapsulation techniques in finishing process,Detail study of the process to produce silk like Polyester. Study about cationic, reactive and silicon emulsion softeners. Brief study about stiffening of textile materials, Nano finish, Self cleaning finish.

TOTAL : 45 PERIODS

REFERENCES
TC3312  DYEING OF SYNTHETIC TEXTILES  L T P C
         3 0 0 3

UNIT I
Mass Colouration of Polyester, Nylon, Acrylic and polypropylene, Advantages & Disadvantages of Mass Colouration; Difference between Mass Colouration and Dyeing.

UNIT II
Polyester Dyeing: carrier, HTHP and thermosol methods of dyeing. CD polyester dyeing, micro denier PET dyeing. Practical problems and their solutions. Stripping of dyed PET

UNIT III

UNIT IV

UNIT V

TOTAL : 45 PERIODS

REFERENCES

TC3313  DYEING OF CELLULOSIC TEXTILES- II  L T P C
         3 0 0 3

UNIT I

UNIT II
UNIT III
Dyeing of Indigo (synthetic indigo. Dyeing of cellulose materials with phthalogen blue, mineral khadi, aniline black, pigments, dyeing of Jute and other vegetable fibres.

UNIT IV

UNIT V
General idea about water, steam and electricity consumption in dyeing department and various measures to reduce the consumption of water, steam and electricity.

TOTAL : 45 PERIODS

REFERENCES

TC3314 TECHNOLOGY OF PRINTING- II

UNIT I PRINTING OF POLYESTER
Preparation of cloth for printing, paste formulation, selection criteria of dyes, Direct, Discharge and Resist styles of printing. Mechanism and the chemistry of various discharging and resisting chemicals used. Fixation and after treatments.

UNIT II PRINTING OF POLYAMIDES AND ACRYLICS
Preparation of cloth for printing, paste formulation, printing of polyamide with acid, disperse, metal complex dyes. Printing of acrylics with disperse and cationic dyes. Direct, discharge and resist styles of printing.

UNIT III PRINTING OF SILK AND WOOL
Preparation of silk cloth for printing, paste formulations, printing of silk with various classes for dyes. Direct, discharge and resist styles of printing. Preparation of wool cloth for printing, paste formulations. Direct, discharge and resist styles of printing on woolen materials.

UNIT IV PRINTING OF BLENDED FABRICS
UNIT V  TRANSFER PRINTING

Introduction of transfer printing, sublimation transfer, melt transfer, film release, wet transfer printing. Methods used for transfer printing, machines used for transfer printing. Developments in transfer printing.

TOTAL : 45 PERIODS

REFERENCES

TC3315  ENGINEERING ECONOMICS

UNIT I INTRODUCTION
Economic Activities – Nature of economics – Significance of economics – Managerial economics and other disciplines – Micro economics and macro economics – Normative and positive economics, objectives of the firm– Methods of managerial economics.

UNIT II DEMAND UTILITY ANALYSIS AND FORECASTING

UNIT III PRODUCTION AND COST ANALYSIS

UNIT IV PRICING

UNIT V FINANCIAL ACCOUNTING SYSTEM

TOTAL : 45 PERIODS
REFERENCES
   Accounting” Laxmi Publication (P) Ltd, New Delhi, 2005.

TC3317 DYEING OF SYNTHETIC TEXTILE LABORATORY

S.No | Experiments
--- | ---
1. | Effect of water hardness & pH in dyeing of polyester with disperse dyes.
2. | Dyeing of Polyester using carriers.
3. | Dyeing of Polyester by HTHP methods.
5. | Exhaust dyeing of Polyester/Cotton blended fabrics with disperse/reactive system.
8. | Exhaust dyeing of Polyester/Viscose blended fabrics with disperse/reactive system.
10. | Dyeing of Polyester/Wool blended fabrics using disperse/acid system.
11. | Dyeing of Polyester/Wool blended fabrics using disperse/basic system.
14. | Matching of shades with the help of computer colour matching system.
15. | Dyeing of acrylic fibre with cationic dyes.
16. | Dyeing of Nylon fabrics

TOTAL : 45 PERIODS

TC3318 TEXTILE PRINTING LABORATORY

S.No | Experiments
--- | ---
1. | Direct style of printing using hot brand reactive dyes.
2. | Direct style of printing using Vinyl Sulphone dyes.
3. | Direct style of printing using Pigment Dyes on cotton and P/C Blend.
4. | Direct style of printing using Disperse Dyes.
5. | Direct style of printing using Vat Dyes.
6. Direct style of printing with Solubilised Vat dyes.
7. Direct style of printing with Khadi on Hosiery.
10. Silver print on hosiery fabrics.
12. Tie and Dye style of printing on cotton fabrics
13. Batik styles print on cotton fabrics.
14. White Discharge on Reactive ground.
15. Colour Discharge on Reactive ground.
16. Burn out style printing.

TOTAL : 45 PERIODS

TC3319 TEXTILE FINISHING LABORATORY

S.No Experiments
1. Finishing the given fabric using 2 % starch.
2. Finishing the given fabric using 2 % softener
4. Finish the sample using the given resin.
5. Giving water repellent Finish to the given fabric sample.
7. Crease recovery finishing of cotton.
9. Comparison of different resins for crease recovery finishing of cotton.
10. Weight reduction of polyester.
12. Scroopy finish for silk.

TOTAL : 45 PERIODS

TC3401 WATER AND EFFLUENT TREATMENT AND POLLUTION CONTROL

UNIT I
Impact of man on the Environment – an over view of Urbanization and Biodiversity.
Environmental pollution – classification of pollution – Effect of industrial effluents – a detailed study of effluents discharged by (A) Soap and detergent manufacture industry (B) Synthetic resin manufacture industry (C) Textile processing industry (D) Viscose, Rayon manufacture industry – (Study includes origin of effluent, important characteristic and general mode of treatment) (D)Dyes and Auxiliary manufacturers.
UNIT II
Constituents of water and their effect on Textile wet processing – Water pollution – wastes that contribute to water pollution – Harmful effects of water pollution and source of water pollution and source of water pollution – Traditional types of water pollution, programmes which includes WHO, ISO standards for raw water criteria – A general study on raw water pollution and consequence of River water pollution – Effluent discharge standards for inland surface water public sewers, on land for irrigation, marine coastal areas and drinking water parameters – Quality requirements of water for cotton and synthetic Textile processing – A general study on Boiler water requirements which includes problem caused by water and effects and feed water requirements for low and medium pressure boilers and at a pressure of 450 – 500 PSI.

UNIT III

UNIT IV
Effect of effluents – General treatment procedure parameters to be determined at Sizing, Desizing, Kier boiling, Bleaching, Mercerizing, Dyeing, Printing, Combined effluent treatment of industrial waste – Brief study on Screening, Sedimentation, Equalization, Neutralisation, Coagulation, Secondary treatment – Trickling filtration Activated sludge process, oxidation ponds, Anaerobic Digestion, Tertiary treatment – Evaporation (solar and steam). Reverse osmosis, ion exchange, chemical precipitation and removal by Algae and activated carbon treatment. Model schematic diagram for – Wastewater treatment plant for textile mills – Primary and Secondary units & Tertiary treatments, Quality parameters at entry and exit of RO.

UNIT V

REFERENCES

TOTAL : 45 PERIODS
UNIT I
HRD: Management task of HRD – Social interest and relevance – Improving the working conditions (case studies) – Improving productivity (case studies) – Attention to human needs (case studies) – Role of personnel manager – Selection process – Induction process – Personnel appraisal – Reward systems – Training programmes (Case studies) – Role of HRD manager.

UNIT II
TQM: Tools and techniques – Motivation of workers – Customer focus-emphasis on team work – Emphasis on competitive spirit – concepts of quality circles – Improvement in performance of the company and quality of group behaviour through quality circles - decision making process – Approach to TQM in Textile Industry (Case studies) Facing internal and external competition (case studies) – work culture change through TQM – Top management perspective – Accomplishment of objectives.

UNIT III

UNIT IV
Energy Conservation: Case studies
Machinery Maintenance: Maintenance schedules – Maintenance cost.

UNIT V
Modvat & Cenvat – Customs duty – Rates of taxes applicable to textile mills.
Eco-Auditing and Eco-Labeling: Norms & Procedures.

TOTAL : 45 PERIODS

REFERENCES
UNIT I 9

UNIT II 9

UNIT III 9
Conduct metric measurements – Important Laws, Definitions, conductance measurements, applications, Types, advantages and disadvantages of Conduct metric titration’s.
Potential measurements, pH determination, Ion selective electrodes, Application of pH measurements, (pH paper, solution) Type of potentiometer titration’s advantages, pH Buffers and standardization.
Thermal methods – Thermogravimetry, differential Thermal analysis, Thermometric titration’s and their applications.

UNIT IV 9

UNIT V 9
Errors, Precision and Accuracy: Definitions, Significant figures, Types of errors, Methods of expressing accuracy and precision, confidence limits.

TOTAL : 45 PERIODS

REFERENCE BOOKS
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TOTAL : 45 PERIODS

REFERENCES
4. AATCC Technical manual, 2008 Association of Textile chemists and Colorists. USA.
5. Orientation Programme on Wet Processing-Quality & Process Control, BITRA Publications. 1986
S.No | Experiments
---|---
1. | Development of Low temperature peroxide bleaching in soft flow
2. | Development of combined desizing and scouring using bio technology
3. | Development of dyeing of cotton fabric with Jigger
4. | Development of dyeing of cotton fabric with Winch
5. | Development of one bath dyeing of PET / CO blends
6. | Development of producing of aroma /Ayurvedic finishing on textile materials

TOTAL : 45 PERIODS

TC3408
PROBLEM ANALYSIS AND CASE STUDIES IN WET PROCESSING

S.No | Experiments
---|---
1. | Analyse the Problem & Case Studies in Desizing
2. | Analyse the Problem & Case Studies in Scouring
3. | Analyse the Problem & Case Studies in Bleaching
4. | Analyse the Problem & Case Studies in Mercerizing
5. | Analyse the Problem & Case Studies in Dyeing
6. | Analyse the Problem & Case Studies in Printing
7. | Analyse the Problem & Case Studies in Finishing (Mechanical and Chemical finishing)


TOTAL : 45 PERIODS

TC3410
DISASTER MANAGEMENT

UNIT I INTRODUCTION

UNIT II DISASTER MANAGEMENT AND RISK REDUCTION IN PROCESSING
UNIT III AWARENESS OF RISK REDUCTION

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

UNIT IV DEVELOPMENT PLANNING ON DISASTER

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

UNIT V SEISMICITY

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

REFERENCE

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

TC3001 CHEMICAL PROCESSING OF MAN MADE TEXTILES L T P C

3 0 0 3

UNIT I

Combined preparatory processes - Low temperature scouring and bleaching - Heat setting of synthetic fabrics - effects of heat setting, Drawing, texturising on dyeing.

UNIT II


UNIT III

Printing of synthetic and blended fabrics with different dye classes - Direct, resist and discharge styles of printing - Transfer printing of polyester and blends.

UNIT IV

Different functional and easy care finishes on synthetics and blends like anti-stat, soil-release, soil-resistant, flame-retardant, low liquor.

UNIT V

Chemical processing of synthetic knitted goods and garments.

TOTAL : 45 PERIODS
REFERENCES
3. Dr.V.A.Shenai, Technology of Textile Processing Vol.IV 1982

TC3002 ECO-FRIENDLY DYES, CHEMICALS AND PROCESSING L T P C
3 0 0 3

UNIT I INTRODUCTION

UNIT II ECO-FRIENDLY PREPARATION, DYEING, PRINTING AND FINISHING

UNIT III ECO-AUDIT

UNIT IV ECO-NORMS AND ECO-LABELING
UNIT V  TESTING OF ECO-PARAMETERS  9

TOTAL : 45 PERIODS

REFERENCE BOOKS
4. Eco Textiles '98, Bolton Institute, 1998
5. Eco Textiles, Book of Papers, BTRA, 1996

TC3003  FIBRE REINFORCED COMPOSITES  L T P C
3 0 0 3

UNIT I  INTRODUCTION  9

UNIT II  COMPOSITE MATERIALS  9

UNIT III  PREPREGS  9
Introduction to manufacturing techniques - property requirements — Textile preforms - weaving, knitting and braiding.

UNIT IV  COMPOSITE MANUFACTURING TECHNOLOGY  9
Vacuum bagging - compression moulding — injection moulding - pultrusion – thermoforming — filament winding - resin transfer moulding.

UNIT V  PROPERTIES OF COMPOSITES  9

TOTAL : 45 PERIODS
REFERENCES

TC3004 GARMENT MANUFACTURING TECHNOLOGY
L T P C
3 0 0 3

UNIT I APPAREL INDUSTRY

UNIT II PATTERN MAKING AND CUTTING
UNIT III SEWING

UNIT IV APPAREL PRODUCTION SYSTEMS

UNIT V PRESSING AND PACKING

ACCESSORIES

TOTAL : 45 PERIODS

REFERENCES
UNIT IV  
Garment Printing. Various techniques of printing of garments. garment printing machineries and their recent developments. 
Recent developments in printing technology.

UNIT V  
Computer aided design systems for textile printing - Recent developments in textile printing machinery including automation. Developments in thickeners, water based binders,

TOTAL : 45 PERIODS

REFERENCES
5. Tyler, Textile Digital Printing Technologies, Textile Institute Publication UKVol.37 No.4, 2005

TC3006  
ANALYSIS OF TEXTILE CHEMICALS  
L T P C  3 0 0 3

UNIT I  
BASIC CONCEPTS  

UNIT II  
ANALYSIS OF CHEMICALS IN PRETREATMENT  

UNIT III  
ANALYSIS OF CHEMICALS IN DYEING AND PRINTING  
UNIT IV  ANALYSIS OF FINISHING CHEMICALS  9
Types of textile softeners – Evaluation of cationic softeners by Methylene Blue method
and Bromophenol Blue method – Evaluation of Bon-ionic softeners using ferric cyanide
method and Phosphomolybdic acid method and Ammonium cobalt Thiocyanate method
– Evaluation of anionic softeners – Evaluation of reactive softeners – Evaluation of
Polyethylene emulsions by Estimating total solids and active content – Evaluation of
water repellancy imparted by silicon emulsions by testing the treated samples for spray
test, cone test, contact angle and capillary raise test – Evaluation different resins by test
is the treated samples for total solids, total Formaldehyde and free Formaldehyde –
Evaluation of fluorescent brightening agent.

UNIT V  EVALUATION OF COMMON CHEMICALS  9
Estimation of the purity of the following chemicals, such as Hydrochloric acid, Sulfuric
acid, Sodium Hydroxide, Sodium carbonate, Sodium Bicarbonate, Sodium Chloride and
Sodium Sulphate – Estimation of Hydrogen peroxide content by iodimetry and
permanganometry – Estimation of the oxalic acid – Analysis of Potassium dichromate
for total chromium content – Analysis of soap for moisture content unsaponifiable fat free
alkyl and the total fatty acid – Estimation of Sodium hydro sulphate. Analysis of Sodium
sulphide for its reducing power. Estimation of chemicals in mixtures viz Sodium
carbonate/Sodium hydroxide and Sodium carbonate/Sodium bicarbonate

TOTAL : 45 PERIODS

REFERENCE BOOKS

TC3007  TECHNICAL TEXTILES  L T P C

UNIT I  HIGH PERFORMANCE FIBRE  9
Manufacture of glass filaments and staple fibre - manufacture of staple fibre yarn-
properties and applications of filament and staple fibre yarns. Asbestos Thread:
Manufacturing process - properties and applications of asbestos yarn. Ultra
High Modulus fibres - Carbon fibres - Aramid and related fibres.

UNIT II  TYRE CORDS AND FABRICS  9
Requirements of tyre cord - suitability of various fibres-Polyester and Nylon tyre cords
-manufacture of tyre cords - physical and mechanical property requirements of tyre cord
fabrics- fabric design - Specifications - Rubberised textiles.

UNIT III  BELTS  9
Conveyor belts - physical and mechanical properties-construction, manufacture of
conveyor belts & power transmission belts. HOSE: Construction, applications and
properties (physical and mechanical).

UNIT IV  FILTER FABRICS  9
General consideration of filtration of solids from liquids, solid from gases, solids from
solids, liquids from liquids, liquids from gases and gases from gases.
PROTECTIVE CLOTHING: Fire protection-thermal protection - electro-magnetic protection - water proof fabrics - protection against microorganisms, chemicals and pesticides - protection against aerosols.

UNIT V
MEDICAL TEXTILES: Surgical Textiles - Suture threads, Cardio Vascular Textiles - Knitted cardiac biological valves. Dialysis Textiles- Hollow fibres as dialysis membrane. Hospital Textiles - Operation and post operation clothing—disposable draperies; sanitary applications

REFERENCES
5. Shishoo,Textile in spot, Textile progress, Textile Institute, Manchester, Aug. 2005
7. Kennady, Anand Miraftab, Rajandran, Medical Textile & Biomaterials for Health care, Woodhead publishing Ltd., UK, 2005

TT2072 APPAREL MARKETING AND MERCHANDISING

AIM
To study the various concepts involved in apparel marketing and merchandising.

OBJECTIVE
- To impart the knowledge of organization, marketing, merchandising, sourcing and documentation aspects of apparel business.

UNIT I
Organization of the Apparel Business: Introduction to apparel industry – Organization of the apparel industry – Types of exporters – Business concepts applied to the apparel industry International trade.

UNIT II
UNIT III

UNIT IV

UNIT V
Documentation: Order confirmation, various types of export documents, pre-shipment post-shipment documentation, terms of sale, payment, shipment, etc. Export incentives: Duty drawback, DEPB, I /E license-exchange control regulation- foreign exchange regulation acts-export management risk-export finance. WTO / GATT / MFA – functions and objectives, successes and failures

TOTAL : 45 PERIODS

TEXT BOOKS

REFERENCES

TC3009 CLOTHING SCIENCE AND PRODUCT ENGINEERING L T P C
3 0 0 3

UNIT I
DIMENSIONAL STABILITY: Hygral expansion - Relaxation shrinkage - Felting shrinkage - methods of measuring dimensional stability to dry cleaning and Dry heat.
SERVICEABILITY: Snagging - Pilling - Abrasion resistance - Tearing strength - Tensile strength - Bursting strength -Corrosive strength - Launderability - Crock resistance - Flammability - Scorching - Fusing - Static electricity - Seam strength and slippage

UNIT II
AESTHETICS: Colour - colour fastness - shade variation – colour measurement
UNIT III

**FABRIC HANDLE:** Bending - Drape - Crease recovery - fabric thickness - Shear - Bias extension - formability - fabric friction - objective evaluation of fabric hand by KES and FAST

UNIT IV

**INTRODUCTION TO DESIGN LOGIC OF TEXTILE PRODUCTS** – Classification of textile products and components.

**YARN DESIGN:** Material, technology, and specifications - yarn design elements - design based on structure and material properties

**FABRIC DESIGN:** Material, technology, and specifications - Fabric design elements - design based on structure and material properties

UNIT V


**TOTAL:** 45 PERIODS

REFERENCES

8. Matisunita, Design Logics, Textile Progress, UK

TC3010 **NONWOVEN FABRICS AND SPECIALTY FABRICS**

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UNIT I

**INTRODUCTION**

UNIT II  BONDING


UNIT III  FINISHING AND TESTING


UNIT IV  APPLICATIONS AND PRODUCT DEVELOPMENT

Nonwovens for hygiene, medicine - safety, cleaning, household products, home textiles - apparels and technical applications. Re-utilization of nonwovens Concepts and definitions - Product development for garments, decorative fabrics, home textiles and technical textiles. Costing of nonwoven products. Techno economics

UNIT V  SPECIALTY FABRICS


TOTAL : 45 PERIODS

REFERENCES

TC3011  ADVANCED WET PROCESSING MACHINERY

UNIT I

Advances in continuous processing of cotton and wool materials - Advances in heating systems hank and yarn dyeing machines(cheese and warp) — importance of winding in yarn dyeing — calculation of winding density — detailed maintenance schedule for cheese dyeing machines. Use of microprocessors in processing machines.
UNIT II
Advances in Beam dyeing - Advances in soft flow, over flow, jet dyeing machines —
Developments in jiggers,—Detail maintenance schedule for beam dyeing, jet dyeing and
jiggers.

UNIT III
Detail study and developments in vertical drying ranges - RF dryer, yarn dryer, tubular
& open width knitted fabric dryer, Tumble dryer, developments in balloon padding, hydro
extractor, rope opener, maintenance schedule for the above machines. Heating systems
for hot air stenters, Clip & pin type of stenters; Jig stenters — over feeding system and
its importance - Hot flue dryer — float dryer — maintenance schedule for the above
machines.

UNIT IV
Developments in preparation of screens for roller, rotary, flat bed screen printing
machines. Principle and working of fully automatic flat bed screen printing machine - with
programmer line diagram and its advantages - developments in agers - Developments in
garment printing machines - various practical problems & possible remedies, Transfer
printing machines and dyeing.

UNIT V
Developments in finishing machineries — Calenders, sanforising machine, Back-filling
machine, maintenance schedule for the above machineries. Shop floor problems &
possible remedies in finishing department, Sand blasting machine, Peach finishing,
Raising, Shearing machines.

TOTAL : 45 PERIODS

REFERENCE BOOKS
1. Datye. K.V. and Vaidya. A.A., Chemical Processing of Synthetic fibres and blends,
   2, , Mahajan Book Distributors, Ahmedabad. 1982
4. Shirley Institute, Jet dyeing Machines, Shirley Institute Publications, (S 33),
   U.K.1981
5. Gokhle S.V. and Dhingra A.K., “Maintenance in Chemical Processing Department of
   Industrial Estate, GD Ambedkar Road, Wadala, Bombay.1995
   Bookshop, Leeds, U.K.
UNIT I CONCEPTS OF TEXTURISING
Purpose - Types of texturised yarns - Classification of process - Comparison of texturised and untexturised yarns and fabrics – Mechanics of texturising. Physical and mechanical properties of texturised filament yarn structure and geometry of texturised yams - Application of texturised yarns - Role of spin finish on texturised yarns. Basic Concepts of Helenca process, false twist, edge crimping, stuffer box gear crimping, knit - deknit, Turbo-duo-twist and air jet texturising, - (Principles only).

UNIT II DRAW TEXTURISING & FALSE TWIST TEXTURISING
Advantages - Simultaneous and sequence draw texturising - Working principles and machines,

UNIT III FRICTION TEXTURISING AND AIR JET TEXTURISING
Principles - Beltex Unit, Ring tex Unit. - Heating elements mechanism of heating - Zone length and speed. Texturised yarn defects. Air Jet Texturising- Principle - Air jet nozzle types - Process variables - Yarn properties

UNIT IV TEXTURISING OF MAN MADE FIBRES

UNIT V QUALITY CONTROL AND MACHINE DESIGN CONCEPTS

REFERENCES
1. Wilson D.K. and Kollu, T., “Production of textured yarns by the false twist technique”, Textile Progress Vol.21 No.3 Textile Institute, Manchester U.K

TOTAL : 45 PERIODS
UNIT I SOURCES OF ENERGY 9
Limitations of Natural resources. Unexploited energy sources and problems in their exploitation. Concept of energy management - need for energy conservation- global energy scenario with specific reference to India -Demand side Management (DSM).

UNIT II ENERGY CONSUMPTION 9

UNIT III ENERGY AUDIT 9
Concept - Types of audit - Instrumentation - methodology - analysis. Electrical and Thermal audit

UNIT IV ENERGY CONSERVATION 9

UNIT V NON-CONVENTIONAL ENERGY SOURCES 9

ENERGY INSTRUMENTATION

TOTAL : 45 PERIODS

REFERENCES
GE3008 PROFESSIONAL ETHICS AND HUMAN VALUES  L T P C  
3 0 0 3

UNIT I  HUMAN VALUES  9
Morals, Values and Ethics – Integrity – Work Ethic – Service Learning – Civic Virtue –
Respect for Others – Living Peacefully – caring – Sharing – Honesty – Courage –
Valuing Time – Co-operation – Commitment – Empathy – Self-Confidence – Character –
Spirituality

UNIT II  ENGINEERING ETHICS  9
Senses of 'Engineering Ethics' - variety of moral issues - types of inquiry - moral
dilemmas - moral autonomy - Kohlberg’s theory - Gilligan’s theory - consensus and
disagreement - 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  9
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 like ASME, ASCE,
IEEE, Institution of Engineers (India), Indian Institute of Materials Management,
Institution of Electronics and telecommunication engineers(ISTE),India, etc.

TOTAL : 45 PERIODS

REFERENCES
   York, 1996.
3. Charles D. Fleddermann, “Engineering Ethics”, Pearson Education / Prentice Hall,
   New Jersey, 2004 (Indian Reprint now available)
   Concepts and Cases”, Wadsworth Thompson Learning, United States, 2000 (Indian
   Reprint now available)
   Delhi, 2003.
UNIT I  FIBER, YARN AND P PRODUCTION  9

UNIT II  FABRIC PRODUCTION AND PROCESSING  9
Basics of online monitoring of machine and process performance at different stages of fabric production—Online process control systems in sizing process. – Online monitoring of loom working. – Loom –i and Mill-i systems. Uster Fabriscan for automatic fabric inspection and quality control. Textile CAD: Plain and stripe effect, automatic peg plan and draft generation; Weave construction library, Warp and Weft design, Simulation of colour and weave effect. Automation in Textile Chemical Processing Industry – Temperature control, Pressure control, Bath level control, Online control systems in continuous processing including stenter, Online color matching system, Computer color matching, Print design CAD: Touch up and production of mask films; automatic repeats and half drop generation, colour separation.

UNIT III  APPAREL CAD/ CAM  9

UNIT IV  ADMINISTRATION AND BUSINESS TOOLS  9

UNIT V  PRODUCTION AND MANAGEMENT TOOLS  9

TOTAL : 45 PERIODS

REFERENCES

TC3016 \hspace{1cm} KNITTING TECHNOLOGY \hspace{1cm} L T P C
\hspace{1cm} 3 0 0 3

UNIT I

UNIT II
Fundamentals definitions of weft knitting – Needle loop, Sinker loop, technical face, technical back, open loop, closed loop, course wale, Stitch density, loop length, etc, Fundamental formation of knit tuck and float stitches. Basic knitted structures i.e. plain, rib, interlock and purl, knitting cycle of operation and needle control.

UNIT III
Effect of loop length and properties of fabrics. Factors affecting the loop length, Faults in weft knitting, causes and remedies, Production calculation. Elements of Flat knitting machines – Different types of machines.

UNIT IV
Fundamental classification of Warp knitting. Definitions – open loop, closed loop, under lap, Swinging, Shogging, etc, - Classification of warp knitting - Tricot, Raschel & Simpler machines – 2 bar,3 bar and 4 bar machines. Simple warp knitted structures.

UNIT V
Beam preparation for Warp knitting, yarn requirements – Positive and Negative let off mechanisms - Production calculations in Warp knitting. Recent developments in Warp & weft knitting.

TOTAL : 45 PERIODS
REFERENCES

TC3017 HOME TEXTILES

UNIT I HOME FURNISHING 3 0 0 3

UNIT II FLOOR COVERINGS 9

UNIT III CURTAINS AND DRAPERIES 9

UNIT IV BED LINERS 9

UNIT V TOWELS 9
Window Textile Sun Filters – Reflective textile.

TOTAL : 45 PERIODS
REFERENCES