KUMARAGURU COLLEGE OF TECHNOLOGY, COIMBATORE-6
(An Autonomous Institution Affiliated to Anna University, Coimbatore)

CURRICULUM 2009

B.Tech - TEXTILE TECHNOLOGY

SEMESTER - I

Code No.	Course Title	L	T	P	C
THEORY					
ENG101	Technical English	2	1	0	3
MAT101	Engineering Mathematics – I	3	1	0	4
PHY101	Engineering Physics	3	0	0	3
CHY101	Engineering Chemistry	3	0	0	3
MEC101	Engineering Graphics	2	0	3	3
CSE101	Programming with 'C'	3	1	0	4
GHE101	Personal Values -I	1	0	0	1
PRACTICAL					
CHY401	Chemistry Laboratory	0	0	3	1
MEC401	Engineering Practices Laboratory	0	0	3	1
CSE401	Programming Laboratory	0	0	3	1

TOTAL PERIODS – 32 **TOTAL CREDIT – 24**

SEMESTER - II

Code No.	Course Title	L	T	P	C
THEORY					
ENG102	English For Pragmatic Usage	1	0	2	2
MAT103	Engineering Mathematics – II	3	1	0	4
PHY106	Applied Physics	3	0	0	3
CHY105	Chemistry for Textiles	3	0	0	3
MEC102	Engineering Mechanics	3	1	0	4
TTX101	Textile Fibers	3	0	0	3
PRACTICAL					
PHY401	Physics Laboratory	0	0	3	1
CSE451	Advanced Programming Laboratory	0	0	3	1
TTX401	Fiber Analytical Laboratory	0	0	3	1
GHE102	Personal Values -II	0	0	2	1

TOTAL PERIODS – 31 **TOTAL CREDITS – 23**

ENG101 TECHNICAL ENGLISH
(Common to all branches of Engineering and Technology)

L	T	P	C
2	1	0	3

OBJECTIVES

- To assist learners enhance their technical jargon and to impart knowledge about the application of technical English.
- To familiarize learners with different rhetorical functions of technical syntax
- To inculcate written proficiency in commercial and business context
- To improve the competency of professional writing with special reference to career related situations
- To provide pragmatic exposure to technical correspondence.

UNIT – I FOUNDATIONS OF TECHNICAL COMMUNICATION 5

Technical Jargon – Formation of engineering & technical vocabulary – Affixing – Derivational jargon – Inflectional Morphemes – Nominal Compounds & technical vocabulary – Acronyms and abbreviations, Concord – Agreement and Government of scientific / technical syntax – Tense – Impersonal passive structure used in engineering & technical texts, Modal verbs, Infinitives and Gerunds

UNIT - II TECHNICAL SYNTAX 5

Kinds of Technical Syntax – Causal expressions – Purpose and functional expressions, Conditional syntax – Four types, Reported speech – Imperative structure – Instructions in industrial situation, Discourse markers – Equipment / Process description, Analytical writing – Writing a paragraph – Scientific text – Juxtaposed technical facts

UNIT – III CORRESPONDENCE IN CORPORATE SECTOR 9

Creating an advertisement, Transcoding – Graphics into text – Text into Charts / Tables – Bar charts – Pie Charts – Flow charts, Editing – Contextual occurrence of common errors – Syntactic & Semantic Errors – Preventive Parameters – General application of articles and preposition – Punctuation – Spelling – Tags – Interrogative structures – Proof reading

UNIT – IV TECHNICAL WRITING 5

Writing abstracts, Note making, Summarizing – Diction – Objective tone, Report writing – Techniques of writing a report – Kinds of Reports – Industrial Report – Project Proposals – Report on the status of a project – Report on the challenges of a project.

UNIT - V GENERAL CORRESPONDENCE 6

Modules of a letter – Official & Demi-Official Letters – Applying for Educational / Car / Home Loans – Internet connection – Joining Report – Leave letter – email correspondence – Industrial visit – Inplant Training – Letter to the Editor, Business Letters – Calling for a quotation – Placing Order – Letter of Complaint – Letter seeking Clarification – Acknowledging prompt / quality service

L: 30 T: 15 Total : 45Hrs

TEXT BOOK

1. Dhanavel.S.P, English and Communication Skills for students of Science & Engineering, Chennai: Orient Blackswan, 2009 (ISBN 13: 9788125037392)

REFERENCES

1. Rizvi Ashraf .M., Effective Technical Communication, Tata McGraw Hill Publishing Co., Ltd., New Delhi, 2008.
2. Seely John., The Oxford Guide to Writing and speaking, Oxford University Press, Chennai, 2006.
3. Devadoss K., Professional Communication for Engineers, Inder Publications, Coimbatore, 2009.
4. Devadoss K, & Malathy P., Enhance your Employability, Inder Publications, Coimbatore, 2009.

MAT101 ENGINEERING MATHEMATICS I
(Common to All Branches of Engineering & Technology)

L	T	P	C
3	1	0	4

OBJECTIVES:

On completion of the course the students are expected

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

UNIT – I MATRICES **9**

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

UNIT – II THREE DIMENSIONAL ANALYTICAL GEOMETRY **9**

Equations of a plane – Equations of a straight line – Coplanar lines – Shortest distance between skew lines – Sphere – Plane section of a sphere – Orthogonal spheres.

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

Curvature – Cartesian co-ordinates – Centre and radius of curvature – Circle of curvature –Evolutes – Envelopes.

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

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

UNIT – V ORDINARY DIFFERENTIAL EQUATIONS **9**

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

L: 45 ,T: 15 Total : 60Hrs

TEXT BOOK

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

REFERENCES

1. Kreyzig E., "Advanced Engineering Mathematics", John Wiley & Sons (Asia) Pvt, Ltd., Singapore, 8th Edition, 2001.
2. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, Delhi, 36th Edition, 2001.

3. Venkataraman M.K., “Engineering Mathematics”, Volume - II, The National Pub. Co., Chennai, 2003.
4. Kandasamy P., Thilagavathy K., and Gunavathy K., “Engineering Mathematics”, S. Chand & Co., New Delhi, (Re print) 2008.
5. Arunachalam T., “Engineering Mathematics I”, Sri Vignesh Publications, Coimbatore. (Revised) 2009.

PHY101 ENGINEERING PHYSICS
(Common to all branches of Engineering and Technology)

L	T	P	C
3	0	0	3

OBJECTIVES

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

- To impart fundamental knowledge in various engineering subjects and applications
- Design of acoustically good buildings
- Structure identification of engineering materials
- Non destructive techniques
- Interferometric techniques in metrology, communication and civil engineering
- Application of quantum physics to optical & electrical phenomena
- Application of lasers in engineering and technology.

UNIT – I ACOUSTICS AND ULTRASONICS 9

Classification of sound characteristics of musical sound, Loudness Weber Fechner law Decibel, Phon,-Reverberation Reverberation time, Derivation of Sabine s formula for reverberation time (Rate of Growth and Rate of Decay) Absorption coefficient and its determination - Factors affecting acoustics of buildings (Optimum reverberation time, Loudness, Focussing, Echo, Echelon effect, Resonance and Noise) and their remedies. Ultrasonic production Magnetostriction & piezoelectric methods - Detection Thermal and Piezoelectric methods, properties, Determination of velocity of ultrasonic waves in liquid using acoustic grating - Applications SONAR, Measurement of velocity of blood flow & movement of heart.

UNIT – II CRYSTALLOGRAPHY & NON-DESTRUCTIVE TESTING 9

Space lattice, unit cell, Bravais space lattices, Lattice planes, Miller indices Calculation of inter planar Distance, number of atoms per unit cell, Atomic radius, coordination number & packing factor for simple cubic, BCC, FCC and HCP structures NDT methods: Liquid penetrant method, Ultrasonic flaw detector, X-ray radiography & fluoroscopy. Thermography

UNIT – III WAVE OPTICS 9

Air wedge (theory and experiment) - testing of flat surfaces - Michelson interferometer, Types of fringes, Determination of wavelength of monochromatic source and thickness of a thin transparent sheet - Theory of plane, circularly and elliptically polarized light - quarter and half wave plates, production and analysis of plane, circularly and elliptically polarized light - Photo elasticity Birefringence - effect of a stressed model in a plane polariscope Isoclinic and isochromatic fringes Photo elastic bench

UNIT – IV QUANTUM PHYSICS 9

Planck s quantum theory of black body radiation (Derivations), Photo electric effect - Compton effect (derivation) and Experimental verification of Compton effect Schr dinger wave equation Time independent and time dependent equations (derivation), Physical significance of wave function, particle in a box (in one dimension) electrons in a metal.

UNIT – V LASER & FIBRE OPTICS **9**

Einstein s coefficients (A & B), Nd-YAG laser, He-Ne laser, CO2 laser, semiconductor laser - Homo-junction and Hetero-junction (only qualitative description) - Applications Material processing, CD-ROM & Holography (Qualitative) Optical fibre- Principle and Propagation of light in optical fibres-Numerical aperture and acceptance angle-types of optical fibres Single and Multimode, step index & graded index fibres Applications - Fibre optics communication system, Fibre optic sensors(Displacement and temperature sensors), Medical endoscope.

L: 45, T : 15 Total :60Hrs

TEXT BOOK

1. Avadhanalu.M.N., & Kshirsagar.P.G,, A textbook of Engineering Physics, S.Chand & Company Ltd, New Delhi, 2005.
2. Gaur R.K., & Gupta S.L., Engineering Physics, 8th edition, Dhanpat Rai Publications (P) Ltd., New Delhi, 2003.

REFERENCES

1. Rajendran V., & Marikani A., Applied Physics for Engineers, 3rd Edition, Tata McGraw Hill Publishing Company Limited, New Delhi, 2003.
2. Gopal.S., Engineering Physics, Inder Publications, Coimbatore, 2006.
3. Arumugam M., Engineering Physics, 5th Edition, Anuradha Agencies, Kumbakonam, 2003.
4. Palanisamy P.K., Physics for Engineers, Vol.1 & Vol.2, 2nd Edition, Scitech publications, Chennai, 2003.

CHY101 ENGINEERING CHEMISTRY
(Common to all branches of Engineering and Technology)

L	T	P	C
3	0	0	3

OBJECTIVES

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

UNIT – I ELECTROCHEMISTRY 9

Single electrode potential - standard electrodes (Hydrogen & calomel electrodes) - electrochemical series - Nernst equation and problems. Types of electrodes (Metal-metal ion electrode, metal -metal insoluble salt electrode, glass electrode) - determination of pH using glass electrode - application of emf measurements and problems - reversible and irreversible cell - Galvanic cell - Concentration cells - Kohlrausch law of independent migration of ions and its application - Conductometric titration - Polarization - Overvoltage - Decomposition potential.

UNIT – II ENERGY STORING DEVICES 9

Introduction - primary and secondary batteries (dry cells - alkaline batteries, lead acid storage cell, nickel - cadmium cell, lithium battery) - fuel cell (hydrogen and oxygen fuel cell) - photogalvanic cell.

Nuclear Energy Sources

Nuclear fission process - characteristics of nuclear fission - chain reactions - nuclear energy - nuclear reactors (light water nuclear power plant).

UNIT – III THERMODYNAMICS 9

Thermodynamics - thermodynamic processes (isothermal, isobaric, isochoric and adiabatic processes) - internal energy mathematical form of first law – enthalpy - limitation of first law - statement of second law of thermodynamics (Clausius and Kelvin) - definition of entropy - entropy change for a reversible process - entropy change for an isothermal expansion of an ideal gas and problems - definition of free energy and work function - Gibbs Helmholtz equation - applications and problems – Van't Hoff isotherm and isochore - applications and problems.

UNIT – IV SURFACE CHEMISTRY 9

Adsorption: Types of adsorption - adsorption of gases on solids - adsorption isotherm (Freundlich, Langmuir isotherms) - adsorption of solutes from solutions - applications role of adsorption in catalytic reactions - ion exchange adsorption - basic principles in adsorption chromatography.

UNIT – V SPECTROSCOPY 9

Beer Lambert's Law - colorimetric analysis - principles, instrumentation (block diagram only) - estimation of concentration of a solution by colorimetry - flame photometry - theory, instrumentation (block diagram only) and application – UV – Visible & IR spectroscopy - principles, instrumentation (block diagram only) and simple applications.

Total : 45Hrs

TEXT BOOK

1. Jain P.C. and Monika Jain, Engineering Chemistry, Dhanpat Rai Pub. Co. (P) Ltd., New Delhi, 14th edition, 2002.

2. Kuriacose J.C. and Rajaram J., Chemistry in Engineering and Technology, Vol. 1& 2 , Tata McGraw-Hill Publishing Co. Ltd.., New Delhi, 2005.

REFERENCES

1. Bahl B.S., Tuli G.D., and Arun Bahl, Essentials of Physical Chemistry, S.Chand & Co. Ltd., New Delhi, 2004.
2. Somorjai G A, Introduction to Surface Chemistry and Catalysis, John Wiley and Sons. Inc. New York, 1994.
3. Shaw D.J., Introduction to Colloid and Surface Chemistry, Butterworth-heinemann publishers, 1992.
4. Syed Shabudeen P.S., and Shoba U.S., Applied Engineering Chemistry, Inder publications, Coimbatore 2009.

MEC101 ENGINEERING GRAPHICS
(Common to all branches of Engineering and Technology)

L	T	P	C
2	0	3	3

OBJECTIVES

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

UNIT- I PLANE CURVES, PROJECTION OF POINTS AND LINES 15

Importance of graphics in design process, visualization, communication, documentation and drafting tools, Construction of curves - ellipse, parabola, and hyperbola by eccentricity method only. Orthographic projection of points.
Projections of straight lines located in first quadrant - determination of true length and true inclinations.

UNIT -II PROJECTIONS OF SURFACES AND SOLIDS 15

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

UNIT- III SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES 15

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

UNIT -IV PICTORIAL PROJECTIONS 15

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

UNIT -V FREE-HAND SKETCHING 15

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

L: 30, P: 45 Total : 75Hrs

TEXT BOOK

1. Basant Agrawal and CM Agrawal, Engineering Drawing, McGraw-Hill, New Delhi, First Edition, 2008
2. Venugopal K., and Prabhu Raja V., Engineering Graphics, New Age International (P) Limited, New Delhi , 2008.

REFERENCES

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

CSE101 PROGRAMMING WITH 'C'

L	T	P	C
3	1	0	4

OBJECTIVES

- To learn the basic concepts of computing.
- To know the methodology of problem solving.
- To develop skills in programming using C language.

UNIT-I BASICS OF COMPUTERS AND PROGRAMMING LANGUAGES 9

Components of a computer system – Hardware – Software - Problem solving techniques- Program control structures – Programming paradigms – Programming languages- Generations of programming languages -Language translators - Features of programming languages.

UNIT II C FUNDAMENTALS 9

Introduction to C –Overview of compilers and interpreters – Structure of a C program – Programming rules – Executing the program - **C declarations –** Introduction – C character set – Delimiters – C key words – Identifiers – Constants – Variables – Rules for defining variables – Data types – Declaring variables – Initializing variables – Type conversion – Constant and volatile variables - **Operators and Expressions –** Introduction – Priority of operators and their clubbing- Comma and conditional operator- Arithmetic operators- Relational, Logical and Bitwise operators- **Input and Output in C-** Introduction – Formatted and Unformatted functions- Commonly used library functions- **Decision statements –** Introduction **–** *if, if-else,* nested *if-else, break, continue*, *goto, switch ( ),* nested *switch ( ), switch ( ) case* and nested *if* statements - **Loop control statements-** Introduction- *for* loop, nested *for* loop,*while* loop, *do-while* loop, *do- while* statement with *while* loop

UNIT III FUNCTIONS AND ARRAYS 9

Functions – Introduction- Declaration of function and function prototypes-The return statement- Types of functions-Call by value and Call by reference-Function returning more values-Function as an argument- Function with operators - Function and decision statements-Function and loop statements-Functions with arrays and pointers- Recursion- Pointer to function- **Storage class –**Introduction- Automatic, External, Static and Register variables- **Arrays-** Introduction- Array initialization – Definition of array- Characteristic of array-One dimensional array - Predefined Streams - Two dimensional array - Three or multi-dimensional arrays – *sscanf ( )* and *sprintf ( )* functions – Operation with arrays.

UNIT IV STRINGS AND POINTERS 9

Working with strings and Standard functions - Introduction **-** Declaration and initialization of string – Display of strings with different formats – String standard functions – **Pointers –** Introduction – Features of pointers – Pointer declaration – Arithmetic operations with pointers – Pointers and arrays – Pointers and two-dimensional arrays – Array of pointers – Pointers to pointer – Pointers and strings – Void pointers **–Dynamic memory allocation –** Dynamic memory allocation – Memory models – Memory allocation functions.

UNIT V STRUCTURE, UNION AND FILES 9

Structure and Union – Introduction – Features of structures – Declaration and initialization of structures – Structure within structure – Array of structures – Pointer to structure – Structure and functions – Typedef – Bit fields – Enumerated data type – Union – Calling BIOS and DOS services – Union of structures - **Files –** Introduction - Streams and file types – Steps for file operations – File I/O – Structures read and write – Other files functions – Searching errors in reading / writing files – Low level disk I/O – Command line arguments – Application of command line argruments – Environment variables – I/O redirection.

L: 45, T: 15 Total : 60Hrs

TEXT BOOK

1. ITL Education Solutions Limited, A N Kamthane, "Computer Programming ", Pearson Education (India), 2009.

REFERENCES

1. Byron S Gottfried, "Programming with C", Second Edition, Schaum's OuTlines, Tata MCGraw –Hill Publishing Company Limited, 2006.
2. E.Balagurusamy,"Programming in ANSI C", Fourth Edition, TMH, 2007.

GHE101 PERSONAL VALUES - I
(Common to all branches of Engineering and Technology)

L	T	P	C
1	0	0	1

UNIT – I **5**

Introduction – Importance's of Human Excellence – Objectives – Personal Values – definitions- purpose and Philosophy of Human life – Body, Mind and Soul – Physical exercises introductions.

UNIT – II **5**

Introduction - Need and Practice – Analysis of thought – origins of thought and its effect – what you think, you become – Refinement of desire – Physical exercises continuation – Meditations – I stage (Agna Initiation)

UNIT- III **5**

Anger management - What is Anger – Its evil effect - Neutralizations of anger– Practice – Worry – why to Worry – Eradications of worries – Method – Physical exercises – continuation – Meditation – II stage (Santhi Initiation)

Total : 15Hrs

CHY401 CHEMISTRY LABORATORY
(Common to all branches of Engineering and Technology)

L	T	P	C
0	0	3	1

OBJECTIVES

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

PREPARATION OF SOLUTIONS (STANDARD)

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

WATER TESTING

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

ELECTRO CHEMICAL ANALYSIS

7. Estimation of hydrochloric acid by pH metry.
8. Conductometric titration of strong acid and strong base.
9. Conductometric precipitation titration using $BaCl_2$ and Na_2SO_4.
10. Estimation of Iron by potentiometry

PHOTOMETRY

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

Total : 45Hrs

REFERENCES

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

MEC401 ENGINEERING PRACTICES LABORATORY
(Common to all branches of Engineering and Technology)

L	T	P	C
0	0	3	1

A. CIVIL ENGINEERING

1. Carpentry

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

2. Plumbing

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

B. MECHANICAL ENGINEERING

1. Fitting

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

2. Sheet Metal Working

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

3. Welding

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

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Group - II (Electrical & Electronics Engineering)

C. ELECTRICAL ENGINEERING PRACTICE **12**

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

D. ELECTRONIC ENGINEERING PRACTICE **12**

List of Experiments

1. Assembling simple electronic component on a small PCB and Testing.
2. Soldering simple electronic circuits and checking continuity.
3. Measurements using digital multimeter.
    - DC and AC voltage measurement
    - DC and AC current measurements.
    - Resistance Measurement.
    - Continuity measurement.
4. Testing of Electronic components
    - Resistors
    - Inductors and capacitors
    - Diodes (resistance in forward bias and reverse bias)
    - Transistors

5. Study of CRO and Function generator
    - Study of Panel Controls
    - Measurement of Amplitude, Frequency, phase difference

.

Total : 45Hrs

CSE401 PROGRAMMING LABORATORY
(Common to all branches of Engineering and Technology)

L	T	P	C
0	0	3	1

LIST OF EXERCISES

1. Practice sessions on the usage of Office package**.**
2. To find the biggest of 3 numbers.
3. To find whether the given number is an Armstrong number.
4. To find the roots of a quadratic equation.
5. To sum the individual digits of an integer.
6. To evaluate the sine series and to generate Fibonacci series.
7. To perform matrix operations
   - Calculation of row sum and column sum
   - To find the maximum and minimum number
   - Addition and multiplication
8. To perform string operations.
9. To check whether a given number is prime or not using functions(use all function prototypes)
10. To compare two strings using pointers.
11. Mark sheet processing using files.

Total : 45Hrs

ENG102 ENGLISH FOR PRAGMATIC USAGE
(Common to all B.E / B.Tech courses)

L	T	P	C
1	0	2	2

OBJECTIVES

To impart the reading comprehension through interpretative and analytic reading exercises, provide exposure to the learners on drafting letters and filling up several applications, improve the level of competency of public speaking with special reference to academic related situations besides, giving practical exposure to professional and formal speaking.

READING COMPREHENSION **10**

1. Exercises to examine the reading comprehension capacity
2. reading for global understanding
3. Reading for specific information
4. Reading for Reviewing (Books, Articles)

TARGETTED WRITING **15**

5. Writing Applications

Opening an SB account and filling bank challans for various purposes
Applying for a Passport
Filling applications for competitive exams
Applying for Medical Leave

6. Drafting Job Application Letters

Writing Resume

7. Writing Statement of Purpose for pursuing higher studies abroad
8. Preparing Notices and Circulars
9. Booking train tickets Online
10. Thematic writing

PUBLIC SPEAKING **10**

11. Appropriate stress and tonal variation
12. Accent neutralization and pronunciation improvement
13. Welcoming a gathering
14. Proposing a Vote of Thanks
15. Compering
16. Presenting one's perception on the picture given
17. Giving Seminars

KINESTHETICS & FORMAL SPEAKING **10**

18. Assessing body language during presentation
19. Involving in constructive conversation
20. Assigning formal situations to enhance the style of telephonic conversation
21. Discriminating assertive and aggressive conversation
22. Power point presentations

Total : 45Hrs

TEXT BOOK

1. Rizvi Ashraf. M, Effective Technical Communication, Tata McGraw Hill Publishing Co., Ltd., New Delhi.

REFERENCES

1. Aruna Koneru , Professional Communication, Tata McGraw Hill Publishing Co., Ltd., New Delhi, 2008.
2. Devadoss, K & Malathy. P, Enhance your Employability, Inder Publications, Coimbatore, 2009

MAT103 ENGINEERING MATHEMATICS II
(Common To CSE, IT, TXT, FT & BT Branches)

L	T	P	C
3	1	0	4

OBJECTIVES

On completion of the course the students are expected

- To understand double and triple integrations and enable them to find area and volume using multiple integrals.
- To know the basics of vector calculus comprising gradient , divergence and curl and line, surface and volume integrals.
- To understand analytic function and its properties
- To understand linear, inverse, circular and bilinear transformations.
- To know the basics of residues, complex integration and contour integration.

UNIT – I MULTIPLE INTEGRALS 9

Double integration – Cartesian and polar coordinates – Change of order of integration – Area as a double integral – Triple integration in cartesian coordinates – Change of variables between cartesian and polar coordinates.

UNIT – II VECTOR CALCULUS 9

Gradient, divergence and curl – Directional derivative – Irrotational and Solenoidal vector fields - Green's theorem in the plane, Gauss divergence theorem and Stoke's theorem (excluding proofs) – Simple applications involving cubes and rectangular parallelopipeds.

UNIT – III ANALYTIC FUNCTION 9

Functions of a complex variable – Analytic function – Necessary conditions, Cauchy Riemann equations in Cartesian coordinates and sufficient conditions (excluding proofs). Properties of analytic function – Construction of analytic function by Milne Thomson method.

UNIT – IV CONFORMAL MAPPING 9

Conformal mapping: $w = z + c$, cz and $w = cz + b$, $1/z$, z^2, e^z, Sin z, Cos z and Bilinear transformation – Critical points – Invariant points.

UNIT – V COMPLEX INTEGRATION 9

Cauchy's integral theorem and Cauchy's integral formula (excluding proofs) – Taylor's and Laurent's series expansions – Singularities – Classification – Residues – Cauchy's residue theorem (excluding proof) – Contour integration – Unit circle and semi-circular contours (excluding poles on real axis).

L : 45, T: 15 Total : 60Hrs

TEXT BOOK

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

REFERENCES

1. Kreyzig E., "Advanced Engineering Mathematics", John Wiley & Sons (Asia) Pvt, Ltd., Singapore, 8th Edition, 2001.
2. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, Delhi, 36th Edition, 2001.
3. Kandasamy P., Thilagavathy K., and Gunavathy K., "Engineering Mathematics", S. Chand & Co., New Delhi, (Re print) 2008.
4. Arunachalam, T., "Engineering Mathematics II", Sri Vignesh Publications, Coimbatore. (Revised) 2009.

L	T	P	C
3	0	0	3

PHY106 APPLIED PHYSICS
(Common to Textile Technology, Biotechnology, and Fashion Technology)

OBJECTIVES

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

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

UNIT – I CONDUCTING MATERIALS **9**

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

UNIT - II SEMICONDUCTING MATERIALS **9**

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

UNIT – III MAGNETIC & DIELECTRIC MATERIALS **9**

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

UNIT – IV NANOTECHNOLOGY AND NEW ENGINEERING MATERIALS **9**

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

UNIT – V MEDICAL PHYSICS **9**

Ultrasound picture of human body – Block diagram of basic pulse Echo system – A Scan – B scan & M Scan Phsychological effect - ultrasound therapy – Phonocardiograph (PCG) source of radioactivity for nuclear medicine - statistical aspects – Basic

instrumentation (Geiger Muller counter, Photo multiplier Tube & Scintillation detector (Renogram) and its clinical applications (Thyroid and Kidney function) – Nuclear medicine imaging devices - Gamma Camera - Positron camera.

Total : 45Hrs

TEXT BOOKS

1. Avadhanalu.M.N. and Kshirsagar.P.G, "A textbook of Engineering Physics," S.Chand & Company Ltd, New Delhi,2005.
2. Pillai S.O., Solid State Physics, 5th edition, New Age International Publication, New Delhi, 2003.

REFERENCES

1. Rajendran V. and Marikani A., "Materials Science" Tata McGraw Hill Publishing Company Limited, New Delhi, 2005
2. Gopal.S, "Materials Science" Inder Publications, Coimbatore, 2007.
3. Ali Omar M, Elementary Solid State Physics, Pearson Education (Singapore), Indian Branch, New Delhi, 2002.
4. Arumugam M., Biomedical Instrumentation, 2nd edition, Anuradha Agencies, Kumbakonam, 2003.
5. Palanisamy, P.K., Materials Science, 2nd Edition, Scitech Pub. India, Pvt., Ltd., Chennai, 2003

CHY105 CHEMISTRY FOR TEXTILES
(Textile, Fashion Technology)

L	T	P	C
3	0	0	3

OBJECTIVES

To impart a sound knowledge of theoretical and modern technological aspects of high polymeric and dyeing materials, water technology, corrosion science as required for the Textile & Fashion technology students.

UNIT I CHEMICAL BONDING 9

Ionic, covalent and co-ordinate covalent bonds (overview only) - nature of covalent bond, hybridization and formation of hydrocarbons - bond polarity - dipole moment and its applications - hydrogen bonding and its consequences - Vander Waal's forces and physical properties - interaction between fibers and dyes (basic concepts only).

UNIT II POLYMES 9

Monomers, polymers – functionality – degree of polymerization – classification based on source, application, thermal properties (thermosetting and thermoplastics) - effect of polymer structure on properties – types of polymerization (addition, condensation, co-polymerization) - mechanism of polymerization (free radical mechanism, coordination mechanism monometallic only) -Preparation (mechanism not required) and applications of polythene, polypropylene, TEFLON, polystyrene, polyvinyl chloride, polyamides (nylon 6,6), polyesters (PET), Vulcanization of rubber – rubber blended plastics.

UNIT III DYES 9

Chromophore and auxochromes - introduction to natural and reactive dyes - synthesis of acid dye (Congo red), basic dye (Malachite green), mordant dye (Alizarin), ingrain dye (Bismark brown), vat dye (Indigo), azodyes (alizarin), phthalein dyes (Eosin).
Introduction to separation of dyeing mixtures using chromatograophy (Column and Gas chromatography)

UNIT IV CORROSION SCIENCE 9

Corrosion – Pilling – Bedworth rule – principles of electrochemical corrosion – causes and factors influencing corrosion –corrosion control – cathodic protection – corrosion inhibitors.
Paints - constituents and functions –special paints (fire retardant, water repellant, temperature indicating and luminous paints)
Varnishes and lacquers

UNIT V WATER TECHNOLOGY 9

Disadvantages of hard water in textile industries – conditioning methods: external treatment methods (zeolite, ion exchange methods), internal treatment (colloidal, phosphate, calgon, carbonate methods) – desalination (reverse osmosis, electro-dialysis) – common effluent treatment methods.

Total : 45Hrs

TEXT BOOK

1. Kuriacose J.C. & Rajaram, J. Chemistry in Engineering and Technology, Vol.1 & 2, Tata McGraw-Hill Pub. Co., Ltd., New Delhi,
2. Jain P.C. and Monika Jain, Engineering Chemistry, Dhanpat Rai Pub. Co. (P) Ltd., New Delhi, Edition 2004

REFERENCES

1. Seymour, R.B. and Carraher, Polymer chemistry, Plenum publishing corporation, New york,
2. I.L Finar , Organic chemistry., ELBS, Oxford Publishing house, India.
3. Syed Shabudeen P.S & Shoba U.S, Chemistry II, Inder publications, Coimbatore.

MEC102 ENGINEERING MECHANICS
(Common To CE, AE, ME, MCE, TXT, FT & BIO branches)

L	T	P	C
3	1	0	4

OBJECTIVES

- To understand the concept of equilibrium of particles and rigid bodies.
- To understand the concept of first and second moment of area.
- To understand the concept of various types of frictions.
- To understand the principle of work energy method, Newton's law and impact of elastic bodies.

UNIT- I BASICS & STATICS OF PARTICLES 12

Introduction - Units and Dimensions - Laws of Mechanics Lame's theorem, Parallelogram and triangular Laws of forces – Coplanar Forces - Resolution and Composition of forces – Free body diagram - Equilibrium of a particle.

UNIT- II EQUILIBRIUM OF RIGID BODIES 12

Moment of a force about point – Varignon s theorem- Moment of a couple-Resolution of force in to force couple system-Resultant of coplanar non concurrent system - Types of supports and their reactions- Requirements of stable equilibrium - Equilibrium of Rigid bodies in two dimensions.

UNIT- III PROPERTIES OF SURFACES AND SOLIDS 12

First moment of area and the Centroid of sections Rectangle, circle, triangle, T section, I section Angle section and Hollow section. Second and product moments of plane area Rectangle, triangle, circle. T Section, I section, Angle section and Hollow section, Parallel axis theorem and perpendicular axis theorem - Polar moment of inertia.

UNIT- IV FRICTION 12

Frictional force-Law of coloumb friction , simple contact friction, Rolling resistance and Belt friction, Ladder friction, Wedge friction

UNIT- V DYNAMICS OF PARTICLES 12

Kinematics: Rectilinear & Curvilinear motion of particles, Displacements Velocity and acceleration.

Kinetics: Newton's law, Work Energy method, Impulse and Momentum, Impact of elastic bodies.

L: 45, T: 15, Total: 60Hrs

TEXT BOOKS

1. Rajasekaran S, Sankarasubramanian, G, Fundamentals of Engineering Mechanics, Vikas Publishing House Pvt. Ltd., Second Edition, 2002.
2. Beer, F.P. and Johnson Jr. E.R. Vector Mechanics for Engineers, Vol. 1. Statics and Vol. 2 Dynamics, McGraw-Hill International Edition, 2004.

REFERENCES:

1. Hibbeller, R.C. Engineering Mechanics, Vol, 1 Statics, Vol, 2 Dynamics, Pearson Education Asia Pvt. Ltd., 2000

2. Ashok Gupta, Interactive Engineering Mechanics Statics A Virtual Tutor, Pearson Education Asia Pvt. Ltd., New Delhi, 2002.
3. Palanichamy, M.S, and Nagan, S., Engineering Mechanics (Statics & Dynamics) Tata McGraw Hill, 2001.
4. Irving H, Shames, Engineering Mechanics – Statics and Dynamics, IV Edition, Pearson Education Asia Pvt. Ltd., 2003.

TTX101 TEXTILE FIBRES

L	T	P	C
3	0	0	3

UNIT – I **9**

Requirements of fibres: Definition of some important terminologies, requirements of fibre formation, molecular weight, degree of polymerization, orientation and crystallinity. Characteristics of good textile fibre, essential and desirable properties of apparel grade textile fibres, Technical grade textile fibres- Classification of fibres.

UNIT – II Natural fibres **9**

Vegetable fibres:

Hair based fibres; Cotton, varieties of cotton, cultivation of cotton, physical and chemical properties.

Bast fibres: Jute, cultivation and harvesting practices, Physical & chemical properties of jute fibre, applications of jute fibre.

Other bast fibres: Hemp, flax, ramie, linen fibre cultivation practices, physical and chemical properties of these fibres.

Leaf fibres: Banana fibres, pineapple fibres, their properties & applications.

Animal fibres:

Wool – types of wool, grading of wool, physical & chemical properties of wool fibre.

Silk – silk, types of silk fibre, physical and chemical properties of the silk fibre, production of silk.

Other fibres: Fibres such as camel hairs, spider silk, etc., their physical and chemical properties.

UNIT – III Man Made fibres **9**

Advantages and disadvantages of man-made fibres, general principles of manufacturing man - made fibres.

Regenerated fibres:

Cellulose Base: viscose rayon, manufacturing of viscose rayon, polynosic high weigh modulus fibre, cupraminium rayon, and acetate & triacetate fibres. The physical and chemical properties of these fibres and their application s. Tencel fibre.

Protein Base: Vicara, Caesin, Ardil fibres. Physical and chemical properties and their applications.

UNIT – IV **9**

Polyamide: Nylon fibre and its derivatives, manufacture of Nylon 6 & Nylon 6, 6. physical and chemical properties of Nylon 6 & Nylon 6,6 fibres and their application. Specialty fibres such as Kevlar, Nomex., properties and their applications.

Polyester: manufacture of polyester fibres. The physical and chemical properties of polyester fibres. The specialty fibres such as flame retardant PET, Hygroscopic PET their properties and applications.

Polyacrylonitrile fibre: Acrylic and modacrylic fibre, the production of acrylic fibre, the physical & chemical properties of acrylic and modacrylic fibres and their application. Polypropylene and polyethylene production, physical and chemical properties and applications.

UNIT – V **9**

Other fibres: Carbon fibre, glass fibres. PVA fibres, Polyurethane (Spandex, Lycra fibre) PVC fibre. Properties and their applications. Identification of textile fibres.

Total : 45Hrs

TEXT BOOKS

1. J. Gordon Cook, "Hand book of Textile fibres (Volume 1 – Natural fibres)", CBS Publishers and Distributors, 2005
2. J. Gordon Cook, "Hand book of Textile fibres (Volume 2 – Manmade fibres)", CBS Publishers and Distributors, 2005

REFERENCES

1. H.V. Sreenivasa murthy "Introduction to Textile fibres", The Textile Association (India) publications, Mumbai 1987.
2. E.P.G.Gohl and L.D. Vilensky, "Textile Science", CBS Publishers and Distributors, New Delhi, 2003.
3. R.W. Moncrieff, "Man made fibres", Butterworths Limited, 1975.
4. A.A. Vaidya, "Production of synthetic fibres", Prentice Hall of India Pvt., Ltd., New Delhi, 1988.
5. V.B. Gupta and V. K. Kothari, 'Manufactured fibre Technology", Chapman and hall, First edition 1997.

PHY401 PHYSICS LABORATORY
(Common to all branches of Engineering and Technology)

L	T	P	C
0	0	3	1

1. Torsional Pendulum determination of rigidity modulus of wire and moment of inertia of disc.
2. Non Uniform Bending - Young modulus determination
3. Viscosity- Determination of co-efficient of Viscosity of liquid by Poiseuilles flow
4. Lee s disc- Determination of thermal conductivity of a bad conductor
5. Air wedge- Determination of thickness of a thin wire
6. Determination of velocity of sound and compressibility of liquid - Ultrasonic interferometer.
7. Determination of specific resistance of given coil of wire – Carey Foster's Bridge.
8. Spectrometer - Determination of wavelength of Hg source using Grating
9. Determination of wavelength of Laser using Grating and Particle size determination and acceptance angle in an optical fibre.
10. Determination of Band gap of semiconductor material.

Total : 45Hrs

CSE451 ADVANCED PROGRAMMING LABORATORY
(For all branches other than CSE & IT)

L	T	P	C
0	0	3	1

List of Programs
UNIX & C

The following programs are to be executed in Linux environment.
C programs are expected to employ pointers wherever possible.

1. Create a file which contains the student details and perform the following operations.
    a. Display the contents of a file on the screen.
    b. Rename the file
    c. Create a new directory and move the above file into it.
    d. Copy the contents of two files into a third file.

2. Create a file which contains the employee details such as Employee No., Employee Name, Employee Salary, Employee Designation and perform the following operations.
    e. Search for a particular employee.
    f. Create a file containing details of employees with salary greater than 5000 using pipes.

3. List the files and directories created and change the access rights of the employee file as follows.
    g. Only readable
    h. Only writable

4. Write a C program to find the roots of a quadratic equation of the form $ax^2+bx+c=0$. The roots can be calculated using the formula $\frac{-b \pm \sqrt{b2-4ac.}}{2a}$
    Write a function to calculate the roots of the given equation. The function must use three formal parameters to receive the coefficients a, b and c and two pointer parameters to send the roots to the calling function.

5. Write a C program to find the sum of two (nxn) matrices and to print the resultant matrix using pointers.

6. Write a C program to count
    a. No .of characters.
    b. No .of words.
    c. No .of lines / sentences
    in a given text file.

7. Write a C program that compares two text files and returns 0 if they are identical and 1 if they are not identical

MATLAB PROGRAMS

8. Matrices – Addition, subtraction, multiplication, Inverse and Determinant of a matrix calculation.
9. Polynomials –Evaluating & Plotting, determining roots of a polynomial.
10. Polynomial curve fitting.
11. Numerical integration.
12. Differential equations- numerical solution.

Total : 45Hrs

TTX401 FIBRE ANALYTICAL LABORATORY

L	T	P	C
0	0	3	1

1. Study of longitudinal view of natural and synthetic fibres
2. Study of cross-Sectional view of natural and synthetic fibres
3. Study of flammability of fibres
4. Identification of fibres through solubility tests
5. Identification of fibres through elemental analysis
6. Study of swelling behaviour of cotton and viscose in alkaline solution
7. Determination of blend proportion of blends
8. Determination of moisture regain of fibres
9. Study of diametric swelling behaviour of fibres
10. Estimation of spin finish in man made fibres through Soxhlet extraction
11. Determination of density of fibres
12. Determination of Molecular Weight of fibres/Polymers using Viscometry

Total : 45Hrs

GHE102 PERSONAL VALUES - II

L	T	P	C
0	0	2	1

UNIT – I **5**

Understanding Self – Who am I? – self realisation - our different self – Kaya Kalpam – Theory & practice – physical exercises – Completion – Meditation III stage (Thuria Initiations)

UNIT – II **5**

Harmony between body, mind & soul – physical well being – Exercises practical benefits - Benefits of meditations – benefits of Kaya Kalpa – Applying the practices in Life –

UNIT – III **5**

Personal values – Identifications – Adaptations – Implementations – practices & Benefits – Exercises, Meditation and Kaya Kalpa practices – perceptions.

Total : 15Hrs

KUMARAGURU COLLEGE OF TECHNOLOGY, COIMBATORE-06
(An Autonomous Institution under Anna University, Coimbatore)

CBCS CURRICULUM 2009

B.TECH. TEXTILE TECHNOLOGY

SEMESTER III

Code No.	Course Title	L	T	P	C
THEORY					
MAT106	Probability and Applied Statistics	3	1	0	4
EEE251	Basics of Electrical and Electronics Engineering	3	0	0	3
EEE252	Instrumentation and Control Systems	3	0	0	3
MEC201	Basics of Civil and Mechanical Engineering	3	0	0	3
TTX102	Man Made Fibre Production	3	0	0	3
TTX103	Spinning Technology I	3	1	0	4
PRACTICAL					
EEE451	Electrical Engineering Laboratory	0	0	3	1
ECE490	Electronics Engineering Laboratory	0	0	3	1
TTX402	Spinning Laboratory	0	0	3	1
GHE103	Human Excellence Family Values	0	0	2	1

Total Periods: 31 **Total Credits: 24**

SEMESTER IV

Code No.	Course Title	L	T	P	C
THEORY					
CHY107	Environmental Science and Engineering	3	0	0	3
MAT108	Numerical Methods	3	1	0	4
MEC202	Theory of Machines	3	1	0	4
ECE290	Electronics and Microprocessor for Textile Industry	3	0	0	3
TTX105	Weaving Technology	3	1	0	4
TTX107	Textile Chemical Processing I	3	0	0	3
PRACTICAL					
TTX403	Weaving Technology Laboratory	0	0	3	1
ECE491	Microprocessor Laboratory	0	0	3	1
GHE104	Human Excellence Professional Values	0	0	2	1

Total Periods: 29 **Total Credits: 24**

Signature of the Chairman BOS TXT

MAT106 – PROBABILITY AND APPLIED STATISTICS 3 1 0 4
(Common for III Semester TXT,FT,BIO & IV Semester IT,CSE)

OBJECTIVES:

On completion of the course, the students are expected

- To know the use of measures of central tendency, dispersion and correlation for analysis of data.
- To understand the concepts of probability and random variables.
- To know about some standard distributions and their properties.
- To be able to test hypothesis using various tests for large and small samples.
- To analyze experiments based on one-way, two – way and Latin square classifications.
- To understand the basics of quality control using control charts.

UNIT I STATISTICAL MEASURES 9

Measures of central tendency: Mean, Median and Mode – Measures of variation – Range, standard deviation, Mean deviation and coefficient of variation. Correlation and Regression: Karl Pearson's coefficient of correlation –Rank Correlation – Regression lines (Definitions and simple numerical problems only).

UNIT II PROBABILITY AND RANDOM VARIABLE 9

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

UNIT III STANDARD DISTRIBUTIONS 9

Binomial, Poisson and Normal distributions –properties- Fitting of Binomial, Poisson and normal distributions to data.

UNIT IV TESTING OF HYPOTHESIS 9

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

UNIT V DESIGN OF EXPERIMENTS AND QUALITY CONTROL 9

Analysis of variance – One way classification –Two – way classification – CRD - RBD - Latin square – LSD; Concept of process control - Control charts for variables – $\overline{X}$, R – charts – Control charts for attributes – p, np, c – charts – Tolerance limits.

L: 45 T: 15 Total: 60Hrs

TEXT BOOKS:

1. Veerarajan T., "Probability and Statistics", Tata McGraw-Hill, New Delhi, 2007 and 2nd Reprint 2004.
2. Gupta S. P, "Statistical Methods", Sultan Chand and Sons Publishers, 2004. (Unit - I)

Signature of the Chairman BOS TXT

REFERENCES:

1. Johnson R. A., "Miller and Freund's Probability and Statistics for Engineers", Sixth Edition, Pearson Education, Delhi, 2000.
3. Gupta S.C, and Kapur, J.N., "Fundamentals of Mathematical Statistics", Sultan Chand, Ninth Edition, New Delhi, 1996.
4. Walpole R. E., Myers S.L. and Keying Ye, "Probability and Statistics for Engineers and Scientists", Pearson Education Inc., 2002.
5. Arunachalam T., "Probability and Statistics", Inder Publications, Coimbatore, 2008.

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EEE251 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to III Semester TXT & Aeronautical Engineering) 3 0 0 3

OBJECTIVE:

- To introduce the basic concept of Electrical and Electronics theory
- To introduce the basic working principles of machines
- To introduce the basic working of fundamental Electronics circuits

UNIT I **8**

Units, Ohm's Lab, Kirchhoff's laws., energy and power. The resistance parameter, The Inductance Parameter, The capacitance Parameter, sinusoidal functions – terminology, Average and Effective Values of Periodic functions, instantaneous and Average power, Power Factor, Phasor Representation of Sinusoids, Sinusoidal Steady – State Response of Single Elements – RLC. The Series RL circuit, the satires RC circuit, The RLC Circuit.

UNIT II **11**

ELECTRIC MOTORS: DC Drives -DC motors, principles of operation, torque equation, speed, torque characteristics of series, shunt and compound motors. Three phase induction motors, principle of operation, torque equation, speed, torque characteristics of series, shunt and compound motors, cage and wound rotor types, single phase induction motors. Principle of operation, method of starting, types of single phase motors. Industrial Applications: Factors to be considered for selection of motors, determination of power rating of drive motors, selection of motors for textile industry. Introduction about recent developments in the textile machinery.

UNIT III **8**

ELECTRONIC DEVICES: Operation of PN junction diodes, VI Characteristics, zener diode, BJT and FET - working principles and characteristics. MOSFET, types, principle of operation and characteristics. Opto Electronic Devices-Introduction, types, photo conductive, photo diode, phototransistor. Light emitting diode - Principles and Applications.

UNIT IV **9**

ELECTRONIC CIRCUITS: (Qualitative analysis only) Half wave and full wave rectifier, capacitive filters, zener voltage regulator, RC coupled amplifier. Operational amplifiers, ideal op-amps characteristics, inverting and Non-inverting amplifier, difference amplifiers, op-amp applications.

UNIT V **9**

DIGITAL ELECTRONICS: Number systems - binary, octal, hexadecimal, logic gates - AND, OR, NOT, NAND, NOR, EXOR, EXNOR, Half adder, full adder, parallel adder/subractor, flip flops, RS, JK, JK Master slave, D and T type.

Total :45Hrs

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TEXT BOOKS:

1. Hughes .E "Electrical Technology", ELBS and Longman group Ltd., 6th edition, 1987
2. Murugesh Kumar .K and Jaganathan .V "Basic Electrical and Electronics Engineering", Vikas Publishing Ltd., New Delhi, 2001.

REFERENCES:

1. Boylested, "Electronic devices and Integrated circuits", PHI Publishers, 1997.
2. Pillai .S.K, "A First Course on Electrical Drives", Wiley Eastern Ltd., Bombay 1989.

Signature of the Chairman BOS TXT

EEE252 INSTRUMENTATION AND CONTROL SYSTEMS 3 0 0 3

UNIT – I **9**

General concepts of mechanical Instrumentation, Generalized measurement systems. Basisc detector transducer elements, Intermediate modifying systems. Terminating device and methods, Classification of instruments as indicator, recorders and integrators – Their working principles, precision and accuracy. Measurement of error and analysis, Properties of errors. Measurement of displacement, Time, Speed, Frequency, Acceleration, Vibrometer, Acceleration etc.,

UNIT – II **9**

Pressure measurement, Gravitational, bourdon, electric transducers, strain guage, pressure cells, measurement of high and low temperature. Dynamic characteristic of pressure measuring devices. Temperature measurement: Bimetallic, pressure and resistance thermometer, thermocouples, pyrometer and thermistors, calibration.

Flow measurement: Orifice, flow nozzle, venturi, pitot tube, rotometer, Turbine type anemometer, Hot-wire anemometer magnetic flow meter, Ultrasonic flow meter, Calibration.

Density measurements: Phenometer, hydrometer, differential bubbling. Liquid level measurements.

Viscosity: Capillary tube viscometer, Efflux viscometer, falling sphere viscometer, rotating cylinder viscometer.

Humidity: Sling psychrometer, absorption hydrometer, Dew point meter.

UNIT – III **9**

Strain: Strain gauges, types, surface preparation and bonding technique, whetstone circuit, temperature compensation, gauge rosettes, calibration.

Force measurements: Sales and balance, elastic force meter, strain gauge, load cells, hydraulic and pneumatic load cells.

Torque measurement: Mechanical torsion meter, optical torsion meter, electrical torsion meter, Strain gauge torsion meter.

UNIT – IV **9**

Open loop and closed loop, systems, servo mechanism, mathematical modeling of mechanical, electrical and electro mechanical systems, transfer function, signal flow graphs, block diagram algebra, hydraulic and pneumatic control systems. Two way control, proportional control, differential and integral control – simple problems.

UNIT – V **9**

Test Signals, Unit step Time response of first order and second order systems. Time domain Specifications of secomd order systems, concepts of stability, necessary and sufficient condition for stability, Routh – Hinwitz stability constrain, frequency domain specifications – Stability analysis using Bode plots.

Total: 45Hrs

TEXTBOOKS:

1. Sawhney.A.K, "A course in Electrical and Electronics Measurements and Instrumentation, Dhanpat Rai and Sons, New Delhi, 1981.
2. Doebelin,E.O., "Measurement System : Application and Design", Mc.Graw Hill Pub., New York, 1995.
3. Monke, "Control System Engineering, "Khanna Publishers, 1995.

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4. Nagrath.I.J and Gopal.M, "Control System Engineering", Willey Eastern Ltd., 2nd Edition, 1995

MEC201 BASICS OF CIVIL AND MECHANICAL ENGINEERING 3 0 0 3

A- CIVIL ENGINEERING (18)

UNIT – I SURVEYING AND CIVIL ENGINEERING MATERIALS 9

Surveying: Objects – types – classification-principles – measurements of distances – angles- leveling – determination of areas – illustrative examples.

Civil engineering materials: Bricks-stones- sand – cement – concrete – steel sections.

UNIT – II BUILDING COMPONENTS AND STRUCTURES 9

Foundations:Types, bearing capacity – Requirement of good foundations.

Superstructure: Brick masonry – stone masonry – beams – columns – lintels – roofing – flooring – plastering- mechanics – internal and external forces – stress – strain – elasticity – Types of bridges and dams – Basic of interior design and landscaping.

B- MECHANICAL ENGINEERING (27)

UNIT – III power plant engineering 10

Introduction , classification of power plants – working principles of steam , gas, diesel, Hydro electric and nuclear power plants – Merits and Demerits – Thermal boiler in power plant.

UNIT- IV IC ENGINES AND PUMPS 9

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 – pumps – working principles of reciprocating pumps (single acting and double acting) – centrifugal pump.

UNIT – V REFRIGERATION AND AIR CONDITIONING SYSTEM 8

Terminology of Refrigeration and air conditioning . Principle of vapour compression and absorption system – window and split type room Air conditioner.

Total: 45Hrs

TEXT BOOKS:

1. J.Premalatha and S. Sridhar, “Basic civil and mechanical engineering”, Inder publications, 2008.
2. Mohan Sen, “Basic mechanical engineering”, Lakshmi publications, New Delhi, 2006

REFERENCES:

1. Shanmugam G and Palanichamy M S, “Basic civil and mechanical engineering”, Tata McGraw Hill publishing co.,New Delhi, 1996.
2. Ramamruthum. S, “Basic civil engineering”, Dhanpat Rai Publishing Co. (P) Ltd., 1999
3. Seetharaman S. “Basic civil engineering ”, Anuradha Agencies, 2005.
4. Venugopal K and Prahu Raja V, “Basic Mechanical engineering”, Anuradha publishers, Kumbakonam, 2000.

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5. Shantha kumar S R J., “Basic Mechanical engineering ”, Hi- tech publications, Mayiladuthurai, 2000.

Signature of the Chairman BOS TXT

TTX102 MAN MADE FIBRE PRODUCTION 3 0 0 3

UNIT – I **9**

Introduction: Evolution of man made fibres- fibre forming processes. Properties & application of man made fibre. Structural principles of polymeric fibres: Molecular size and interaction-molecular orientation and crystallinity in fibres-Fibre morphology-thermal transitions.

UNIT II **9**

Manufacture of Rayon fibre: Viscose rayon, High wet modulus yarn and polynosic fibres - super absorbent fibres. Super high wet modulus fibre – Lyocell. Manufacture of Soya bean fibre.

UNIT – III **9**

Principles of polymer production & spinning of polyester, Nylon 6 and nylon 66. Specialty polyamide and polyester fibres. Manufacturing of Bicomponent fibres, Biconstitutional fibres with different cross section.

UNIT – IV **9**

Principles of polymer production and spinning of Acrylic fibre, Polyolefin fibres and Elastomeric fibres. Characteristics of Polymers and fibres: characterization at molecular level – characterization at physical structure –thermal characterization, microscopic characterization

UNIT – V **9**

Post spinning process**:** Spin finish, Delusturing, Drawing and Heat setting. Staple fibre production -Tow to top conversion .Recycling of polymer and fibre waste.

Texturising: False Twist, Air Texturising, Crimping process and Draw- texturising process.

Total: 45Hrs

TEXT BOOK:

1. V.B. Gupta and V. K. Kothari, "Manufactured Fibre Technology", Chapman and hall, First edition 1997.

REFERENCES:

1. A. A Vaidya, "Production of synthetic fibres", Prentice Hall of India Pvt. Ltd., New Delhi, 1988.
2. H.G Mark, S. M Atlas and D. Certia. E. (Editors), "Man made fibres-science and Technology", Vol. I III, Inter science publishers, New York, 1987.
3. Usenko, V., "Processing of Man-Made fibres", MIR publishers, Moscow, 1985.
4. Menachem Lewin and Eli M. Pearce (editors), "Handbook of fibre science and Technology: Vol. IV Fibre chemistry", Marcel Decker Inc., New York, 1985.
5. R.W.Moncrief, " Man Made fibres", 6th edition, London Newnes-Butterworths,1975

Signature of the Chairman BOS TXT

TTX103 SPINNING TECHNOLOGY – I 3 1 0 4

UNIT I GINNING AND BLOW ROOM 9

Objectives of ginning, Study of different gins – Knife roller gin, Saw gin, McCarthy gin. Ginning out-turn. Effect of ginning performance on yarn quality– Mixing, blending, Mixing Optimization, Types of machines used for Mixing.

Objectives of blow room. Bale plucker, Principle and working of opening and cleaning. Study of beaters. Lap forming unit. Concepts of opening intensity and cleaning efficiency. Contamination sorters. Beating point required for coarse, fine and manmade fibres and blends. Tuft size, Chute feed system. Fire/metal detector in blow room- Automatic waste evacuation system.

UNIT II CARDING 9

Objective of carding-carding elements: Licker in, Cylinder, doffer, flats. Hook's theory, Transfer co-efficient of carding. Salient features of new generation cards- Production and quality monitoring systems/ waste evacuation system. Autolevellers-Card clothing: features, selection of card clothing for cotton, synthetics, blends- Production calculations and settings- Draft in carding.

UNIT III DRAWFRAME 9

Principle of doubling and drafting. Drafting system: draft theory, drafting wave, actual and mechanical draft. Salient features of new generation draw frame: creel, drafting system, delivery zone- Production and quality monitoring systems- automation in drawing. Autolevellers in draw frame-Integrated draw frame.

UNIT IV COMBING PREPARATION AND COMBING 9

Sliver lap- ribbon lap- super lap machine, pre comber draft – working principle of combing machine - Types of feed – combing setting and their importance, timing diagram – production calculation and fractionating efficiency for a comber- Comber noil percentage.

UNIT V SPEED FRAME 9

Objectives of speed frame. Principle and working of speed frame. Bobbin lead / flyer lead winding. Mechanism of winding and bobbin building. Draft, twist and production calculations. Effect of roller setting, roller pressure, apron spacing on roving quality. automation in speed frame.

L: 45 T: 15 Total:60Hrs

TEXTBOOKS:

1. Klein W., Vol. 1, "The Technology of Short Staple Spinning", The Textile Institute, Manchester, U.K., 1998.
2. Klein W., Vol. 2, "A Practical Guide to Opening & Carding", "The Textile Institute, Manchester, U.K., 1998.
3. Klein W., Vol. 3, "A Practical Guide to Combing, Drawing, and Roving frame" The Textile Institute, Manchester, U.K., 1998.

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REFERENCES:

1. Chattopadhyay R., Technology of Carding, NCUTE, IIT Delhi, 2003.
2. Chattopadhyay R. & Rengasamy R., "Spinning, Drawing, Combing & Roving, NCUTE Pilot Programme.
3. Salhotra K. R. & Chattopadhyay R., Book of papers on "Blowroom and Carding",IIT Delhi 1998.
4. Duraiswamy I, Chellamani P & Pavendhan A., "Cotton Ginning" Textile Progress, The Textile Institute, Manchester, U.K., 1993.
5. Lord P. R., Yarn Production: Science, Technology and Economics", The Textile Institute, Manchester, U.K., 1999.
6. Chattopadhyay R. (Ed), Advances in Technology of Yarn Production, NCUTE, IIT Delhi, 2002

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EEE451 ELECTRICAL ENGINEERING LABORATORY 0 0 3 1

LIST OF EXPERIMENTS

1. Verification of Ohm's Law
2. Verification of Kirchhoff's Law
3. Load test on D.C. Shunt motor
4. Study of D.C. motor Starters
5. Load test on 3-phase Squirrel Cage Induction motor
6. Study of 3 – phase Induction motor starters
7. Load test on 3- phase Slip Ring Induction motor
8. Load test on D.C. Series motor
9. Load test on Single phase Induction Motor
10. Speed Control of D.C. Shunt motor
11. Open Circuit and Load Characteristics of self excited D.C. generator
12. Load test on 3 – phase Slip Ring Induction motor

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ECE 490 ELECTRONICS ENGINEERING LABORATORY 0 0 3 1

LIST OF EXPERIMENTS

1. Introduction to measuring and testing instruments – multimeter and oscilloscope.
2. Testing of op-amp adder and subtractor
3. Testing of op-amp as differentiator and integrator.
4. Testing of op-amp astable multivibrator.
5. 555 timer as an astable multivibrator.
6. Power supplies – building basic rectifier supplies.
7. Half adder and Full adder realization using logic gates.
8. Encoder, Decoder realization using logic gates.
9. Using TTL counter ICS to build event counters.
10. Implementation of Serial-in serial out
    Serial-in parallel-out shift register.

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TTX402 SPINNING LABORATORY 0 0 3 1

1. Study of Ginning Machine.
2. Study of beaters
3. Study of Mixing bale opener (MBO)
4. Study of Chute feed
5. Carding elements and settings
6. Study of drafting system on draw frame and draft calculations
7. Study of combing cycle
8. Twist and draft calculations in speed frame
9. Speed and draft calculations in ring frame
10. Twist calculations in ring frame
11. Production and twist calculation of Two-For-One twister (TFO)
12. Study on production of fancy yarns
13. Production and twist calculation in rotor spinning

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GHE 103 HUMAN EXCELLENCE – FAMILY VALUES 0 0 2 1
(Common to III Semester all Branches)

1. Family value-meaning –Introduction-values-Blessings for family peace-Restraint in family life- harmony in family-Interactive workshop.

2. Blissful married life-Greatness of good family relationship – Family life & Spiritual development.

3. Love and compassion –Greatness of womanhood –Food is medicine (healthy food habits)

4. Simple physical exercises.

5. Kayakalpa Yoga

6. Sun Rays Therapy

7. Padmasana.

8. Vajrasana.

9. Chakrasana & Viruchasana

10. Meditation

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CHY107 ENVIRONMENTAL SCIENCE AND ENGINEERING 3 0 0 3
(Common for III Semester EEE,IT,CSE & IV Semester TXT,FT,BIO,MCE,CIVIL, ME)

OBJECTIVES:

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

1. 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 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.

2. 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.

3. ENVIRONMENTAL POLLUTION 8

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

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4. 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

5. 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.

Field Work

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

Total : 45Hrs

TEXT BOOKS:

1. Deswal.S and Deswal.A, " A basic course in Environmental studies" Dhanpat Rai & Co, 2006.
2. Gilbert M.Masters, Introduction to Environmental Engineering and Science, Pearson Education Pvt., Ltd., Second Edition, ISBN 81-297-0277-0, 2004.
3. Miller T.G. Jr., Environmental Science – Sustaining the earth, Wadsworth Publishing Co., 1993

REFERENCES:

1. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad India., 2002
2. Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media. 1996
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 Publishing Co., 2003
6. Trivedi R.K and P.K.Goel "Introduction to Air pollution" Techno-science Pubications. 2003
7. Yamuna R.T "Environmental Science" Inter Publications, 2008

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MAT108 NUMERICAL METHODS 3 1 0 4
(Common for IV Semester ME, CE, MCE, EEE, AE, TXT & EIE)

OBJECTIVES:

At the end of the course, the students would be acquainted with the basic concepts in numerical methods and their uses are summarized as follows:

- The roots of nonlinear (algebraic or transcendental) equations, solutions of large system of linear equations and eigen value problem of a matrix can be obtained numerically where analytical methods fail to give solution.
- When huge amounts of experimental data are involved, the methods discussed on interpolation will be useful in constructing approximate polynomial to represent the data and to find the intermediate values.
- The numerical differentiation and integration find application when the function in the analytical form is too complicated or the huge amounts of data are given such as series of measurements, observations or some other empirical information.
- Since many physical laws are couched in terms of rate of change of one/two or more independent variables, most of the engineering problems are characterized in the form of either nonlinear ordinary differential equations or partial differential equations. The methods introduced in the solution of ordinary differential equations and partial differential equations will be useful in attempting any engineering problem.

1. NUMERICAL SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS 9

Linear interpolation method (method of false position) – Iteration method - Newton's method - Solution of linear system by Gaussian elimination and Gauss-Jordan methods- Iterative methods: Gauss Jacobi and Gauss-Seidel methods – Inverse of matrix by Gauss – Jordan method.

2. INTERPOLATION 9

Newton's forward and backward difference formulas – Stirling's formula - Divided differences – Newton's divided difference formula - Lagrange's interpolation (derivations are excluded for all methods).

3. NUMERICAL DIFFERENTIATION AND INTEGRATION 9

Numerical differentiation: Derivatives by using Newton's forward , backward and divided differences – Derivatives by using Stirling's formula - Numerical integration by Trapezoidal and Simpson's 1/3 and 3/8 rules – Double integrals using Trapezoidal and Simpson's 1/3 rules.

4. NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS 9

Single step methods: Taylor's series method – Euler and Improved Euler methods for solving first order equations – Fourth order Runge – Kutta method for solving first and second order equations – Multistep method: Milne's predictor and corrector method.

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5. NUMERICAL SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS

9

Finite difference solution of one dimensional heat equation by Bender Schmidt and Crank Nicholson methods – One dimensional wave equation by explicit method and two dimensional Laplace and Poisson equations.

L : 45 T: 15 Total: 60Hrs

TEXT BOOK:

1. Venkataraman M.K., "Numerical Methods in Science and Engineering", The National Publishing company, 5th Edition, May 2003.

REFERENCES:

1. Gerald C. F. and Wheatley P.O, "Applied Numerical Analysis", Sixth Edition, Pearson Education Asia, New Delhi, 2002.
2. Sastry S.S, "Introductory Methods of Numerical Analysis", Third Edition, Prentice – Hall of India Pvt Ltd, New Delhi, 2003.
3. Kandasamy P., Thilagavathy K. and Gunavathy K., "Numerical Methods", S.Chand Co. Ltd., New Delhi, 2007.
4. Arunachalam. T., "Numerical Methods", Inder Publications, Coimbatore, 2009.

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MEC 202 THEORY OF MACHINES 3 1 0 4

UNIT-I BASICS OF MECHANISMS 9

Terminology and definitions-degree of freedom-Kutzbach criterion-Grashoff's law-Kinematic inversions of 4-bar chain and slider crank chains-Description of common mechanisms-single, double and offset slider mechanisms-Quick return mechanisms-Ratchets and escapements-Indexing mechanisms-Rocking mechanisms-Straight line generators.

UNIT-II KINEMATICS OF CAM 9

Classification –Displacement diagrams-Uniform velocity, acceleration, simple harmonic and cycloid motions-Layout of plate cam profiles-High speed cams circular arc and tangent cams -Standard cam motion-Pressure angle and under cutting.

UNIT-III GEAR DRIVES 9

Types- Spur gear terminology and definitions –Fundamental law of toothed gearing and Involute gearing -Gear tooth action –Terminology-Interference and undercutting-non standard gear teeth- Introduction to Helical, bevel, worm, rack and pinion gears.

UNIT – IV GEAR TRAINS 8

Classification of gear trains- simple gear train, compound gear train, Epicyclic gear train, velocity ratio of epicyclic gear train- Torques in Epicyclic Gear trains.

UNIT – V FRICTION 10

Belt Drives-Types – Flat, open and crossed belt drive -V- Belt- Single and multiple – Length of belt drive and power transmitted- Introduction to toothed belt drive- Rope drive-Chain drive-terminology, classification-Length of chain.

Clutches- single plate, multiplate clutches- clutches-Screw friction-Torque and Self locking screws.

L: 45 T: 15 Total: 60Hrs

TEXT BOOKS:

1. Rattan S.S, "Theory of machines", Tata MC Graw-Hill publishing company Ltd., New Delhi, 2005.
2. R.S Khurmi and J.K.Gupta, "Theory of machines", S.Chand , 2008.

REFERENCES:

1. Shigley J.E and Uicker J.J. "Theory of machines and mechanisms", McGraw- Hill, Inc. 1995.
2. Thomas Bevan, "Theory of machines", CBS publishers and distributors, 1984.
3. Ghosh A and A. K. Mallick, "Theory of mechanisms and machines", Affiliated East – west Pvt. Ltd., New Delhi, 1988.
4. Rao J.S. and Dukkipati R.V. "Mechanism and Machine Theory", Wiley-Eastern Ltd, New Delhi, 1992.
5. John Hannah and Stephens R.C, "Mechanics of machines", Viva Low Prices student edition, 1999.

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ECE290 ELECTRONICS AND MICROPROCESSOR FOR TEXTILE INDUSTRY 3 0 0 3

UNIT I DIGITAL LOGIC CIRCUITS 9

Digital circuits – Clock – Gates – Truth table – Decoders, Encoders, ROM and RAM. Flip-lops – Counters – ripple, divide by N and up down counters. Microprocessor based systems – An elementary introduction of the chips and organization. Analog to digital conversion – DIGITAL APPLICATIONS of signal conditioning.

UNIT II 8085 CPU ARCHITECTURE 9

ARCHITECHTURE OF 8085 MICRO PROCESSOR: Functional block diagram, registers, ALU -Timing and controls signals-Machine cycles.

UNIT III 8085 CPU INTERFACING AND PROGRAMMING 9

PROGRAMMING OF 8085: Addressing modes-assembly languages form-mnemonics, Instruction set. I/O INTERFACING: 8255 PPI - Simple I/O ports interfacing with 8255 programmable peripheral interface

UNIT IV 8051 MICROCONTROLLER 9

INTRODUCTION TO MICROCONTROLLERS: Architecture of 8051-memory organisation, timer operation, serial interface, interrupt structure. Typical applications of micro controllers.

UNIT V PROGRAMMABLE LOGIC CONTROLLERS 9

Basics of PLC-Advantages, architecture of PLC-CPU, memory and I/O modules. Programming methods for PLC. Programming examples. Applications of PLC and DCS in textile machinery.

Total: 45 Hrs

TEXTBOOKS:

1. Ramesh S.Goankar, "Microprocessors: Architecture, Programming and Applications with the 8085", Penram International Publishing (India), Third Edition,1997.
2. Microcontroller Handbook, INTEL, 1984
3. John E Webb, Ronald A reis, "Programmable Logic Controllers: Principles and Applications", Prentice Hall of India, 4th Edition,1999.
4. Ralph. B and Nathan, W. Industrial Electronic Circuits and Applications. Prentice Hall India Ltd., New Delhi. 1972.

REFERENCES:

1. Sawhney.A.K, "A course in Electrical and Electronics Measurements and Instrumentation, Dhanpat Rai and Sons, New Delhi, 1981.
2. Doebelin,E.O., "Measurement System : Application and Design", Mc.Graw Hill Pub., New York, 1995.
3. Muhammad Ali Mazidi & Janice Gillispie Mazidi," 8051 Microcontrollers and Embedded systems", Pearson Education, New Delhi,2003.
4. John. W. Webb & Ronald A Reis, "Programmable logic controllers: Principles and Applications", Prentice Hall India, New Delhi.
5. Human, J.P., Experimental Methods for Engineers McGraw-Hill Book Co., New Delhi, 1978.

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6. Millman and Halkian, Electronic Fundamentals and Applications, McGraw Hill, New York, 1972.

TTX105 WEAVING TECHNOLOGY 3 1 0 4

UNIT – I **9**

Objectives of winding -Classification of winders. Working principles of winders-yarn clearers-knotters and splicers. Contamination clearers-Winding drums - anti-ribboning device. Cone defects, causes and remedies. Automatic cone and cheese winders. Types and working principles of pirn winding machines. Pirn types and dimentions. Bunching. Pirn winding defects causes and remedies. Production calculations of cone and pirn winders.

UNIT – II **9**

Working principles of beam and sectional warpers. Types of creels - Warping beam defects causes and remedies – Objects of sizing - Working principles of multicylinder and single end sizing machines. Size ingredients, Size preparation, size add-on % and stretch control. Sizing faults, causes and remedies. Production calculations.

UNIT – III **9**

Drawing-in and gaiting machines. Types of weaving motions- primary, secondary and auxiliary motions. Classification of looms. Loom timing diagram for different motions. Tappet shedding – Dobby Shedding- Jacquard shedding.

UNIT – IV **9**

Picking mechanism: Cone over pick, side lever under pick and cone under pick -swell checking devices. 4 bar and 6 bar linkage beat up mechanisms, crank arm types. Negative let-off and positive let-off, five and seven wheel take-up motions.

UNIT –V **9**

Loose reed and fast reed mechanisms - Drop box motions, pick-at-will motion. Pirn changing mechanism. Weaving accessories- Types and selection of heald wires, heald frames, reeds, shuttle, picking accessories - Warp and weft stop motion - drop wires, temples. Weft feelers- different types.

L: 45 T: 15 Total: 60Hrs

TEXT BOOKS:

1. Lord P.R. and Mohammed M.H., “Weaving – Conversion of Yarn to Fabric”, Merrow Publication, 1992.
2. Adanur S., “Handbook of Weaving”, Woodhead Publishing Limited, 2001.
3. Sriramlu P.K., Ajgaonkar D.B. & Talukdar M.K., “Weaving Machines: Mechanisms, Management”, Mahajan Publishers, Ahmedabad, 1998.

REFERENCES:

1. Modi J.R.D., “Sizing Ingredients”, Mahajan Publications, Ahmedabad

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2. Booth J.E., "Textile Mathematics", Vol. II & III, Textile Institute, Manchester,U.K., 1975.
3. Sengupta E., "Yarn Preparation", Vol. I & II, Popular Prakasam, Bombay, 1970.
4. Talukdar M.K., "An Introduction to Winding and Warping", Testing Trade Press,Mumbai.
5. Chakravorthy B., "Mechanism of Weaving Machines", Serampore, West Bengal, 1982.
6. Marks P & Robinson A.T.C., "Principles of Weaving", The Textile Institute, Manchester,1989.
7. Sriramlu P.K., Ajgaonkar D.B. & Talukdar M.K., "Weaving Machines: Mechanisms,Management", Mahajan Publishers, Ahmedabad, 1998.
8. Ajgaonkar D.B., Talukdar M.K. and Wedekar, Sizing: Material Methods and Machineries, Mahajan Publications Ahmedabad, 1999.

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TTX107 TEXTILE CHEMICAL PROCESSING – I 3 0 0 3

UNIT I **9**

Wet process sequences for cotton fabrics: Singeing -Yarn singeing machines. Gas singeing machine for woven and tubular knits - desizing methods-Hydrolytic methods and oxidative methods - Enzymatic desizing - Scouring –Saponification, Emulsification. Batch, Semi continuous and continuous process.

Wet processing sequence for wool - Wool carbonizing. Wet processing sequence for silk-Degumming of silk.

UNIT II **9**

Bleaching of cotton: Hypochlorite-Hydrogen Peroxide-Sodium chlorite. Semi-continuous and Continuous processes. continuous scouring and bleaching machines. Bleaching of cotton/viscose, viscose/linen and polyester/cotton blends.

Mercerisation: Theory –Chemical Effects. Methods :Yarn merceriser: Chain and Chainless Mercerisers, Circular mercerising machine. Liquid ammonia treatment. Woollenization of jute.

UNIT III **9**

Colorants - Classification of Colorants - according to type of application, dyeing behaviour on the main types of fibre – Fastness properties of dyes- principle and methods of application of direct, vat, Solublised vat, Sulphur, reactive, azoic dyes on cotton. Application of Acid, acid chrome, metal complex and reactive dyes on wool. Application of acid and natural dyes on silk. Eco friendly chemicals and banned dyes - Denim dyeing.

UNIT IV **9**

Dyeing of polyester : Carrier, High Temperature High Pressure (HTHP), Thermosol methods .Dyeing of Polyester terry wool. Dyeing of Texturised filament- Mass coloration-Dyeing of polypropylene-Dyeing of Nylon fibres-Dyeing of acrylic fibres. Blends Dyeing: Polyester/cotton, Polyester/ Wool, polyester/viscose blends.

UNIT V **9**

Dyeing machines: Loose stock, bale& hank dyeing machine. Package dyeing machine: pirn, cone, cheese, beam. Fabric dyeing machines: Jigger, Winch, Jet, Soft flow, Infra Red dyeing, Ultrasonic dyeing techniques. Padding mangles. Garment dyeing machines.

Total: 45Hrs

TEXT BOOKS:

1. Broadbent D.A., “Basic Principles of Colouration”, Society of Dyers & Colourists, 2001.
2. Karmakar S.R., “Chemical Technology in the pretreatment processing of textiles”,

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Textile Science & Technology, Elsevier Publication, 1999.

REFERENCES:

1. Trotman, E.R., "Dyeing and Chemical Technology of Textile Fibres", Charles Griffin and Co. Ltd., London. 1990.
2. Shenai, V.A. "Technology of Bleaching and Mercerizing - Vol. III", Sevak Publications Chennai, 1991.
3. Marsh J.T., "An introduction to Mercerizing", Chapman and Hall Ltd., London1941- "E.Ott, H.M.Spurlim and M.W.Grafflin
4. Bhagwat R.S "Handbook of Textile Processing", Colour Publication, Mumbai, 1999.
5. Shenai, V.A., "Principle and Practice of Dyeing", Sevak Publisher, Bombay.
6. T.L.Vigo, "Textile Processing and Properties", Elsevier, New York, 1994.

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TTX403 WEAVING TECHNOLOGY LABORATORY 0 0 3 1

1. Conventional and automatic cone winders.

2. Conventional and Automatic pirn winders

3. Sectional and beam warping machine.

4. Single end sizing of cotton warp.

5. Mechanisms for regulating pirn dimensions and characteristics.

6. Negative Tappet shedding.

7. Over and under picking mechanisms.

8. Warp and weft stop motions

9. Loose reed and fast reed mechanisms.

10. 4x1 drop box mechanism.

11. Positive let-off motion.

12. Seven wheel take-up motion.

13. Automatic pirn changing mechanism.

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ECE491 MICROPROCESSOR LABORATORY 0 0 3 1

LIST OF EXPERIMENTS

1. Assembly language program to perform arithmetic for 8 bit and 16 bit data with 8085 processor
    a) Addition
    b) Subtraction
    c) multiplication
    d) division
2. Subtraction using 1's and 2's complement representation.
3. BCD addition and subtraction
4. Data transfer programming
    a) One byte from one memory location to another memory location
    b) Block transfer
5. Assembly language program to arrange array of data in ascending & descending order.
6. Assembly language program to implement design of counters using time delay calculations.
7. Interfacing Digital Analog Converter 8085 microprocessor.
8. Interfacing Analog Digital Converter with 8085 microprocessor.
9. Stepper motor interface with 8085 microprocessor using 8255.
10. Temperature controller using 8255.

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GHE 104 HUMAN EXCELLENCE – PROFESSIONAL VALUES 0 0 2 1
(Common to IV Semester all Branches)

1. Personality –Concepts, definitions -5 C's and 5 E's – Self development – Leadership Traits –IQ,EQ,SQ.

2. Time management-Practice –Cause and Effect –Professional Ethics –Values.

3. Quality Enhancement – Empowerment of mind – Passion for Excellence –Auto suggestions – Self control.

4. Simplified physical exercises.

5. Yoga Mudra.

6. Pachi Motasana.

7. Ustrasana.

8. Vakkarasana.

9. Salapasana.

10. Meditation

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REGULATIONS 2009

B. Tech. Textile Technology

Curriculum and Syllabi

III and IV year

Passed by

Academic Council

on 18.03.2011

Department of Textile Technology

Kumaraguru College of Technology

COIMBATORE – 641 049

2009 Regulations

B.TECH. TEXTILE TECHNOLOGY

Semester V

Code No.	Course	L	T	P	C
THEORY					
GSS108	Operations Research	3	0	0	3
TTX108	Spinning Technology II	3	1	0	4
TTX109	Shuttleless Weaving	3	0	0	3
TTX110	Textile Chemical Processing II	3	1	0	4
TTX111	Textile Quality Evaluation	3	1	0	4
TTX112	Structure and Properties of Textile Fibres	3	0	0	3
PRACTICAL					
TTX404	Textile Chemical Processing Lab	0	0	3	1
TTX405	Textile Quality Evaluation Laboratory	0	0	3	1
GHE105	Human Excellence Social Values	0	0	2	1

Total Periods: 29 **Total Credits: 24**

Semester VI

Code No.	Course	L	T	P	C
THEORY					
TTX113	Fabric Structure	3	0	0	3
TTX114	Knitting Technology	3	1	0	4
TTX115	Mechanics of Textile Machinery	3	1	0	4
TTX116	Nonwovens and Specialty Textiles	3	0	0	3
TTX117	High Performance Fibres	3	0	0	3
E1	Elective 1	3	0	0	3
PRACTICAL					
TTX406	Cloth Analysis Laboratory	0	0	3	1
TTX407	Knitting and Garment Laboratory	0	0	3	1
GHE106	Human Excellence National Values	0	0	2	1
ENG401	Communication Skill Laboratory	0	0	3	1

Total Periods: 31 **Total Credits: 24**

Semester VII

Code No.	Course	L	T	P	C
	THEORY				
TTX118	Process Control in Spinning and Weaving	3	0	0	3
TTX119	Technical Textiles	3	0	0	3
TTX120	Garment Technology	3	1	0	4
TTX121	Textile Costing	3	0	0	3
GSS104	Principles of Management and Total Quality Management	3	0	0	3
E2	Elective 2	3	0	0	3
	PRACTICAL				
TTX408	Textile and Apparel CAD Laboratory	0	0	3	1
TTX409	Testing of Technical Textiles Laboratory	0	0	3	1
GHE107	Human Excellence Global Values	0	0	2	1
TTX410	Industrial Training *	0	0	2	1

Total Periods: 29 **Total Credits: 23**

* Internal evaluation only

Semester VIII

Code No.	Course	L	T	P	C
	THEORY				
E3	Elective 3	3	0	0	3
E4	Elective 4	3	0	0	3
E5	Elective 5	3	0	0	3
	PRACTICAL				
TTX411	Project	0	0	18	6

Total Periods: 27 **Total Credits: 15**

Total Credits: 181

ELECTIVES

ELECTIVE 1

Code No.	Course	L	T	P	C
TTX201	Mechanical Processing of Man Made Fibres and their Blends	3	0	0	3
TTX202	Texturizing Technology	3	0	0	3
TTX203	Long Staple Spinning	3	0	0	3
TTX204	Work study in Textile Industry	3	0	0	3
TTX205	Maintenance Management in Textile Mills	3	0	0	3

ELECTIVE 2

TTX206	Clothing Science	3	0	0	3
TTX207	Pattern Making and Grading	3	0	0	3
TTX208	Organizational Behaviour	3	0	0	3
TTX209	Textile Project Management	3	0	0	3
TTX210	Apparel Marketing and Merchandising	3	0	0	3

ELECTIVE 3

TTX211	Textile Composites	3	0	0	3
EEE253	Energy Conservation in Textile Industry	3	0	0	3
TTX212	Process and Quality Control in Wet Processing	3	0	0	3
TTX213	Textile Product Engineering	3	0	0	3
TTX214	Textile Marketing	3	0	0	3

ELECTIVE 4

TTX215	Environmental Management in Textile Industry	3	0	0	3
TTX216	Medical Textiles	3	0	0	3
TTX217	Creativity, Innovation and New Product Development	3	0	0	3
TTX218	Nano Technology in Textiles	3	0	0	3
TTX219	Smart Textiles	3	0	0	3

ELECTIVE 5

GSS101	Professional Ethics	3	0	0	3
GSS105	Entrepreneurship Development	3	0	0	3
GSS106	Governance in India	3	0	0	3
GSS107	Indian Economy	3	0	0	3

GSS108 OPERATIONS RESEARCH 3 0 0 3

Objectives:

On completion of the course the students are expected

- To be aware of optimization of resources.
- To understand and apply operations research techniques to industrial operations.
- To know how to formulate and solve Linear Programming Problems using various techniques.
- To solve transportation and assignment problems.
- To analyze CPM and PERT networks and evaluate projects.
- To solve replacement problems of different types.
- To solve sequencing problem.
- To know various queuing models and to solve queue problems.

UNIT- I LINEAR PROGRAMMING PROBLEM 9 Hours

The phases of OR study – formation of an L.P model – graphical solution – simplex algorithm – artificial variable technique: Big M Method, Two-phase method.

UNIT- II TRANSPORTATION AND ASSIGNMENT PROBLEM 9 Hours

Initial basic solution by North West corner method – least cost method – Vogels approximation method – optimality test – MODI method. Unbalanced transportation problem. Assignment problem – Hungarian method – unbalanced assignment problem.

UNIT- III NETWORK MODELS 9 Hours

Shortest route – minimal spanning tree – maximum flow models – Project network: CPM and PERT network.

UNIT- IV REPLACEMENT AND SEQUENCING MODELS 9 Hours

Replacement of items that deteriorate with time – value of money changing with time – Not changing with time – optimum replacement policy – individual and group replacement. Sequencing problem: models with n jobs with 2 machines – problem with n jobs with 3 machines.

UNIT- V QUEUING THEORY 9 Hours

Queuing models – queuing systems and structures – notation – single server and multi server models – Poisson input – exponential service – constant rate service.

TOTAL: 45 HOURS

TEXT BOOK:

1. Taha, H.A," Operations Research", Prentice Hall of India, New Delhi, 2007.
2. Panneerselvam, "Operation Research" Prentice Hall of India, New Delhi, 2007.

REFERENCES:

1. Gupta., P.K., and Hira, D.S., "Operations Research" S.Chand and Co., New Delhi, 2008.
2. Gupta., P.K., and Hira, D.S., "Problems in Operations Research" S.Chand and Co., New Delhi, 2008.
3. Harvey M.Wagner., "Principles of Operations Research", Prentice Hall of India, New Delhi, 2007.

TTX 108 SPINNING TECHNOLOGY II 3 1 0 4

Objectives:

- To impart knowledge about Ring frame and Twisting
- To understand other modern spinning systems
- To understand Spinning theory

UNIT- I THEORY OF SPINNING 9+3 Hours

Drafting theory- Principles of roller drafting -actual draft-drafting wave - floating fibres-Principle of doubling and drafting - index of irregularities-Roller Eccentricity: Nip movements-periodic variation - roller speed variation and stick- slip curve. Twist Insertion Principles: Ring and traveler twisting –balloon theory -up twisting –down twisting-balancing of twist- false twist principle.

UNIT- II RING FRAME 9+3 Hours

Ring Spinning: Principle and operation- drafting system - Creels – Fluted rollers- Types of flutes - top roller loading systems – Balloon control ring & separators-builder motion. Ring and traveller- spindles-spindle drives-Process parameters, speed, setting, break draft, main draft - draft for producing cotton, synthetics and blends- Top roller cots & aprons specifications - Yarn structure and properties, yarn geometry -Production Calculation.

UNIT- III COMPACT SPINNING 9+3 Hours

Introduction – definition – advantages and disadvantages - spinning triangle- working principles of different compact spinning system- structure and properties of compact yarns- application of compact yarn- techno economics of compact spinning.

UNIT-IV OPEN-END SPINNING 9+3 Hours

Rotor Spinning - Operating principle, Advantages and limitations of Rotor Spinning. Raw Material Requirements –Yarn Properties and applications. Comparison of characteristics of yarn from different spinning system. Friction Spinning-Operating principle, Classification, Advantages and limitations of friction spinning-Air-jet spinning: operating Principle, Raw material requirements, Advantages, Limitations. Cover Spinning: Operating principles- air vortex spinning.

UNIT- V DOUBLING AND FANCY YARN PRODUCTION 9+3 Hours

Fancy yarn production -Preparation for Doubling-assembly winder-cone feed- cheese feed-Working of doubling machine – Working of Two For One twister- principle of various fancy yarn producing methods-. SIRO Spinning, Bob Tex spinning, self twist spinning : Yarn properties and applications, Advantages and limitations of these spinning systems.

TOTAL: 45+15 HOURS

TEXT BOOKS:

1. Klein W., “New Spinning Systems”, The Textile Institute, Manchester, Vol. 5, 1993.
2. Lawrence C.A., “Fundamentals of Spun Yarn Technology”, Woodhead Publishing Limited, 2003.

REFERENCES:

1. Chattopadhyay R. (Ed)., “Advances in Technology of Yarn Production”, NCUTE, IIT Delhi, 2002.
2. Lawrence C.A. and Chen K.Z., “Rotor Spinning”, Textile Progress, Vol. 13, No.4, Textile Institute, U.K., 1981.
3. Basu A., "Progress in Air-jet Spinning", Textile Progress, Vol. 29, No.3, Textile Institute, U.K., 1997.
4. Ishtiaque, S.M., Salhotra K.R. and Gowda R.V.M., "Friction Spinning", Textile Progress, Vol. 33, No.2, Textile Institute, U.K., 2001
5. Oxtoby E., “Spun Yarn Technology” Butterworths, London 1983.
6. Gowda R.V.M., “New Spinning Systems”, NCUTE, IIT Delhi, 2003.

TTX109 SHUTTLELESS WEAVING 3 0 0 3

Objectives:

- To gain knowledge about various modern weaving principles and machineries.
- To understand the different weft insertion principles.
- To know about high speed weaving

UNIT- I INTRODUCTION 9 Hours

Limitation of shuttle looms-parameters affecting productivity-Classification of shuttleless looms-Comparison of shuttle and shuttleless looms - warp and weft yarn requirement for shuttleless weaving. Weft accumulators – types- Multiphase weaving machine- circular weaving machines.

UNIT-II PROJECTILE LOOMS 9 Hours

Hours

Gripper projectile machines: Working elements and weft insertion cycle in projectile loom-Torsion bar picking mechanism-Weft selection device-Salient features of projectile machine, Loom timing diagram. Shedding mechanism-Tuck-in selvedge. Weft insertion rate and production calculation.

UNIT-III RAPIER LOOMS 9 Hours

Rapier Machines: - Classification of rapier weaving machines: Flexible, Rigid rapiers- Principles of tip and loop transfer-Weft insertion cycle-Rapier drives-Salient features-selvedges. Weft insertion rate and production calculation.

UNIT-IV AIR JET LOOMS 9 Hours

Jet weaving Machines-Principle of air jet weaving, air nozzles, auxiliary nozzles, profile reed. Air requirements. Suitability of air jet weaving for different fabrics-selvedges. Weft insertion rate and production calculation.

UNIT-V WATER JET LOOMS 9 Hours

Principle of water jet weaving – Weft insertion cycle for water jet –Salient features- Water requirements - Suitability of water jet weaving for different fabrics-fused selvedges. Weft insertion rate and production calculation. Techno economics of shuttleless weaving. Fabric defects and remedies in shuttleless looms.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Talavasaki O & Svaty V, “Shuttleless weaving machines”, Elsevier science publications, Newyork, 1981.
2. Sabit Adanur, “Hand book of weaving”, CRC Press Co. ISBN No. 1-58716-013-7, 2001.

REFERENCES:

1. Ormerod A, “Modern preparation and weaving”, Butterworths, London, 1983.
2. “Techno economics of modern weaving machines”, Textile Association (India), Bombay, 1982.
3. Talukdar M K, Sriramulu P K and Ajgaonkar D B, “Weaving: Machines, Mechanisms and Management”, Mahajan publishers, Ahmedabad, 1981.

TTX110 TEXTILE CHEMICAL PROCESSING –II 3 1 0 4

Objectives:

- To give a detailed knowledge about the chemical concepts of printing methods
- To give a detailed knowledge about the principle of printing machines
- To give a detailed knowledge of principles of finishing of textiles

UNIT-I CHEMICAL CONCEPTS OF PRINTING 9+3 Hours

Styles of printing: Direct, Discharge, Resist- Essential ingredients of print paste and their functions. Print paste rheology and non-Newtonian flow. Mechanism of colour transfer in printing of cotton, wool silk and polyester material with direct, reactive, vat, metal complex, acid dye and pigments for different styles. Mechanism of sublimation transfer printing and melt and film release transfer printing. Fixation and after treatments –Mechanism of steam fixation process.

UNIT-II PRINTING MACHINES 9+3 Hours

Printing Methods- block , roller , screen printing. Printing machines- Roller printing, Screen printing: flat bed, rotary screen printing machines. Preparation of screens for roller printing , flat bed and rotary printing. Mechanical concept of paste flow in engraved roller printing and screen printing .Pressure profile in the paste wedge and flow of paste through screen pores in screen printing. Transfer printing: Principle, machines - Wet transfer, film release transfer and sublimation transfer printing. Digital Printing : Image capture and display by CAD, Digital Colur management systems, principle of charged drop printer and drop on demand printers. Flock printing: Beater Bar Method and Electrostatic method. Working principle of batch and continuous steamer.

UNIT-III FINISHING 9+3 Hours

Classification of finishing: Wet and Dry /Chemical and Mechanical finishing Calendaring: Swissing, chasing, friction, Schreinering, embossing. Antishrinking finishing: Principle of controlled compressive shrinkage/zero-zero finish, Relaxed shrinkage.Softeners: Mechanisms, Types- Anionic, cationic, Nonionic and Amphoteric softeners. Non-ionic softeners based on paraffin and Polyethylene, Silicone softeners. Effect of softeners. Crease resistant finish: Cross linking agents-Nitrogenous and Non nitrogenous resins- Mechanisms of easy-care and durable press finishing. Application methods. Antimicrobial finishes: Mechanisms of antimicrobial finishes, Antimicrobials for controlled release, Bound antimicrobials. Raising techniques**.**

UNIT-IV FUNCTIONAL FINISHES 9+3 Hours

Water proof and repellent finishes: Mechanisms of repellency**,** Paraffin repellents, Stearic acid–melamine repellents, Silicone water repellents, Fluorocarbon-based repellents.Flame resistance finishes: Theory and Mechanisms of flame retardancy, Flame retardants for cellulose, polyester and its blends , application methods.Soil release finish: Mechanisms of soil release. Bio-finishes for cellulose- Action of cellulase enzymes on cellulose. Antistatic finishes: Mechanism, durable and nondurable antistatic finish. Uv Protection finish.

UNIT-V QUALITY CONTROL IN PRINTING AND FINISHING 9+3 Hours

Importance and effect of strength of chemicals, time, temperature, pH and concentration in wet processing. Process control measures in scouring, bleaching , mercerizing, dyeing and printing.

TOTAL: 45+ 15 HOURS

TEXT BOOKS:

1. Shenai, V.A., "Technology of Printing", Sevak Publications, Bombay, 1996.
2. Shenai, V.A., "Technology of Textile Finishing", Sevak Publications, Bombay, 1995.

REFERENCES:

1. Marsh, J.T., "An Introduction to Textile Finishing", Chapman and Hall Ltd., London, 1979.
2. 2W.D.Schindler and P.J.Hauser, Chemical finishing of Textiles, CRC Pr LIC Publication, 2004.
3. Charles Tomasino, Chemistry and Technology of Fabric Preparation and Finishing, Department of Textile Engineering, Chemistry and Science College of Textiles,North Carolina State University, 1992
4. Heywood, "Textile Finishing", Woodhead Publishing Limited, 2003.
5. LWC Miles, "Textile Printing",Society of Dyers and Colorists, Woodhead Publishing Limited, 2003.
6. H A Shah, S M Doshi, "Quality and Process Control", The Textile Association, Mumbai, Chemical processing tablet IX.

TTX111 TEXTILE QUALITY EVALUATION 3 1 0 4

Objectives:

- To impart knowledge about Quality and testing of textiles.
- To evaluate the Quality parameters of textile materials.
- To gain knowledge about application of statistical tools in testing.

UNIT-I INTRODUCTION TO QUALITY 9+3 Hours

Definition of Quality, Types of quality, factors influencing quality, quality control and quality assurance. Objectives of textile testing. Standard test conditions. Accuracy, precision, calibration. Sampling methods, Statistical Quality control: sample size –Applications of 'F' test, 't' test, 'X^{2}' test. Introduction to ASTM and AATCC. Norms – national and international.

UNIT-II FIBRE TESTING 9+3 Hours

Fibre properties - Fibre length: staple length span length – hand stapling method - Baer sorter, Fibro graph-uniformity. Fibre fineness: Fibre fineness testers, calculations. Moisture regain, moisture content determination, calculations. Maturity – testing methods of maturity, calculations – High Volume Instruments-length, strength, maturity and trash & colour modules-analysis and interpretation of results. Advanced Fibre Information System- length, nep and trash modules- analysis and interpretation of results.

UNIT-III YARN TESTING 9+3 Hours

Yarn numbering systems and calculation - Count Determination, Twist and its measurement. Tensile properties of yarn, tensile testing of yarn: Constant Rate of Elongation, Constant Rate of Loading and Constant Rate of Traverse, Instron, Tensojet tensile testers - factors influencing tensile testing of yarns. Evenness – principle of measurement, Uster standards, Imperfections, irregularity charts and calculations. Hairiness – principle of measurement. Classimat faults -Yarn appearance assessment (ASTM Grading, Electronic Inspection Board). Latest developments in yarn testing instruments like Constant Tension Transport (CTT).

UNIT-IV FABRIC TESTING 9+3 Hours

Testing of tensile strength, tearing strength and bursting strength. Testing of dimensional stability- hygral expansion and relaxation shrinkage. Testing of air permeability and water repellency. Testing of abrasion resistance and pilling. Testing of handle and drape, calculations. Objective evaluation of fabric handle –KES and FAST systems. Testing of sewability.

UNIT-V TESTING OF GARMENTS 9+3 Hours

Characteristic requirements of accessories of garments. Testing of buttons, zippers, elastic and hooks. Testing of Linings, interlinings, and fusible interlinings. Testing of sewing threads. Seam strength, Seam Elasticity, Seam Durability. Quality standards in garment industry- Acceptable Quality Level.

TOTAL: 45+15 HOURS

TEXT BOOKS:

1. Booth J. E., "Principles of Textile Testing" Butterworths, 1996.
2. Saville B.P., "Physical Testing of Textiles", Woodhead publishing -UK, 1999.

REFERENCES:

1. Arindam Basu., "Textile Testing (Fibre, Yarn and Fabric)", SITRA, Coimbatore, 2001.

2. Sara J. Kadolph., “Quality Assurance for Textiles and Apparel”, Second Edition, Fairchild Publications, New York, 2007.

TTX112 STRUCTURE AND PROPERTIES OF TEXTILE FIBRES 3 0 0 3

Objectives:

- To gain knowledge about the structure of various fibres.
- To impart knowledge about physical properties of various fibres.

UNIT-I STRUCTURE OF FIBRES 9 Hours

Basic requirements for fiber formation- Intra- and inter-molecular forces, degree of order, degree of orientation of molecular chains, crystalline and amorphous regions – Influence of molecular structure on crystallization. Models of fibre structure. Similarities and differences amongst the structural features of natural and man-made fibres. Investigation of fibre structure – Introduction and Application of Electron microscopy, X-ray diffraction methods, Infra-red radiation techniques, density measurement.

UNIT-II MOISTURE ABSORPTION PROPERTIES OF FIBRES 9 Hours

Absolute humidity and relative humidity- moisture content and regain of different fibres- Moisture regains curves, Hygroscopic nature of fibres. Hysteresis in moisture absorption. Equilibrium absorption - Effect of fibre structure – hydrophilic groups and non-crystalline regions on Moisture absorption. Conditioning of fibers – mechanism of Conditioning, factors influencing rate of conditioning, effect of conditioning on fibre properties.

UNIT- III MECHANICAL PROPERTIES OF FIBRES 9 Hours

Definitions –Load elongation, breaking strength, breaking extension, tensile Stress, tensile strain, mass specific stress, yield point, initial modulus, work of rupture and work factor . Stress-strain curves for various textile fibres and their significance. Mechanical development of large strain. Elastic properties – elasticity, elastic recovery and its relation to stress and strain, work recovery, typical values of elastic recovery and work recovery for various textile fibres. Ways of studying relaxation phenomenon. Mechanical conditioning of fibres – advantages. Time effects – stress relaxation and creep phenomena. Torsional rigidity – its relation to other fibre properties, measurement techniques. Flexural rigidity – its relation to other fibre properties, measurement techniques.

UNIT- IV OPTICAL AND FRICTIONAL PROPERTIES 9 Hours

Refractive index of fibres Birefringence – measurement techniques, effect of factors like fibre orientation, density and regain. Optical orientation factor, its relation with refractive index and birefringence. Reflection of light – specular and diffused reflection, lustre, lustre index, factors influencing lustre. Absorption of light – dichroism, dichroic ratio.

UNIT-V ELECTRICAL AND THERMAL PROPERTIES 9 Hours

Static electricity – generation of static charge and measurement, problems encountered during Processing, elimination techniques. Electrical resistance of fibres, measurement of resistance in fibres, factors influencing electrical resistance. Dielectric properties, factors influencing di-electricity. Thermal properties – specific heat, thermal conductivity, thermal expansion and contraction, structural changes in fibres on heating, thermal transitions – glass transition temperature and melting, heat setting of various synthetic fibres.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Morton W.E and Hearle., J.W.S., "Physical Properties of Textile Fibres", The Textile Institute, Manchester, U.K., 1993.
2. Meredith. R and Hearle, J.W.S., "Physical Methods of Investigation of Textiles", Wiley Publication, New York, 1989.

REFERENCES:

1. Gupta V.B., "Textile Fibres: Developments and Innovations", Vol. 2, "Progress in Textiles: Science & Technology". Edited by V.K. Kothari, IAFL Publications, 2000.
2. Meredith R.., "Mechanical Properties of Textile Fibres", North Holland, Amsterdam 1986.
3. Gohl E.P.G. and Vilensky L.D., "Textile Science", second edition, CBS Publisher and Distributor, 1983.
4. Mishra, S.P., Fibre Science & Technology, New Age International Publishers, 2000.
5. Gupta V.B. and Kothari V.K., "Manufactured Fibre Technology", Chapman and Hall, 1997.

TTX404 TEXTILE CHEMICAL PROCESSING LAB 0 0 3 1

LIST OF EXPERIMENTS

1. Desizing and Scouring of cotton fabrics and determination of the desizing and scouring efficiency by weight loss %.
2. Bleaching of cotton using hypochlorite and determination of whiteness index
3. Bleaching of cotton, polyester/cotton blend using hydrogen peroxide and determination of whiteness index
4. Cold and hot mercerization of cotton Yarn / Fabric and its comparison for strength and water absorption properties.
5. Dyeing of cotton / viscose using direct dyes and studying the influence of Temperature or Time or electrolyte on dye absorption.
6. Dyeing of cotton using vat dyes and assessment of dyed material for dye strength.
7. Dyeing of cotton using hot and cold brand reactive dyes.
8. Dyeing of cotton using naphthol dyes for dark and light shade
9. Dyeing of polyester using carrier dye or HTHP method.
10. Dyeing of protein fibres with acid or basic dyes and determination of dye % in the fabric
11. Assessment of Color fastness to washing and rubbing of dyed material.
12. Printing of cotton fabrics using direct / resist / discharge style.

TTX405 TEXTILE QUALITY EVALUATION LABORATORY 0 0 3 1

LIST OF EXPERIMENTS

1. Determination of Trash, Lint, Micro dust, Invisible loss and Fineness of cotton fibre.
2. Determination of Effective length, Mean length and Short fibres using Baer Sorter.
3. Determination of Fibre strength and elongation %.
4. Determination of Linear density of sliver and roving for three different sample length and analysis of variance-length curve.
5. Determination of Single yarn and Ply yarn twist of the given yarn.
6. Determination of Yarn count, Lea strength and CSP.
7. Determination of Yarn and Fabric Impact Strength.
8. Determination and grading of Yarn Appearance for two different counts.
9. Determination of Fabric thickness, Stiffness and Crease recovery for the given fabric.
10. Determination of Fabric Drape and Bursting strength for the given fabric.
11. Determination of Fabric Abrasion Resistance and Cloth cover factor for the given fabric.
12. Determination of Fabric Pilling for the given fabric.

Syllabus for V Semester

GHE-105 - HUMAN EXCELLENCE- SOCIAL VALUES **0 0 2 1**

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

TTX113 FABRIC STRUCTURE 3 0 0 3

Objectives:

- To develop design and draft for simple weaves,
- To impart knowledge on woven fabric structure.
- To gain knowledge about colour and weave effects.
- To impart knowledge about pile structures.

UNIT- I BASIC WEAVES 9 Hours

Cloth Geometry – Cover Factor – Use of Point Paper – Elementary weaves – plain and its derivatives. Twill and derivatives, Satin – Sateen and derivatives; Ordinary and Brighten Honey Comb, Huck-a-Back and modification. Mock Leno – Distorted Mock leno – Crepe weaves.

UNIT-II CORD EFFECTS 9 Hours

Bedford cords : Plain and Twill faced ,Wadded welts and piques – Wadded piques – Loose and fast back welts and piques – Spot figuring – Arrangement of figures – Drop Designs Half drop bases – Sateen system of distribution.

UNIT-III COLOUR AND WEAVE EFFECTS 9 Hours

Colour theory – Light and Pigment Theory – Modification of colour –Application of colours – Colour and weave effects. Extra warp and Extra weft figuring – with two colours. Backed fabrics: Warp and Weft backed – Reversible and Non-reversible.

UNIT-IV PILE AND DOUBLE CLOTH 9 Hours

Pile fabrics – Warp pile, Fast wire pile – Terry weaves – Terry stripe and checks. Weft pile – Plain back and Twill back velveteen. Lashed pile corduroy – weft plush. Double cloth: Classification – types of stitches-wadded double cloth – warp and weft wadded double cloth – centre warp and weft stitched double cloth.

UNIT-V SPECIAL WEAVES 9 Hours

Gauze and Leno weaves. Russian cord – Net Leno – Madras Muslin structures. Damasks – Ply fabrics – Brocades – Tapestry – Swivel – Lappet – Designs for ornamentation of Fabrics. Application of special jacquards. Self Twilling – Sectional – Inverted hook – Border jacquards.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Grosicki Z.J., “Watson’s Textile Design and Colour” – Butterworths London, 1950.
2. N. Gokarneshan., “Fabric Structure and Design”, New Age International (P) Ltd., Second edition, 2008

REFERENCES:

1. Grosicki Z.J., “Advanced Textile Design & Colour” Butterworths, London, 1952.

TTX114 KNITTING TECHNOLOGY 3 1 0 4

Objectives:

- To gain knowledge about concept of knitting
- To understand the working of various knitting machines and parts
- To understand different knitted structures
- To impart knowledge on development of designs

UNIT-I INTRODUCTION 9 + 3 Hours

Concept of knitting – Weft knitting, warp knitting - Comparison between woven and knitted fabric. Comparison of warp and weft knitting - Knitting needles: spring beard, latch, compound needles, Knitting cycle of latch, spring bearded and compound needle. Study of knitted loops, Stitch density, Loop length, Tightness factor- Classification of knitting machines. - Yarn quality requirements for weft knitting.

UNIT - II WEFT KNITTING 9 + 3 Hours

Conce

Knitting Elements: Cylinder, knitting cam, sinker, feeder, stop motions. Working of plain, rib and interlock knitting machine. Electronic Jacquard knitting machines -Basic principles and elements of flat knitting machines- Different types of flat knitting machines: mechanical and computerized knitting machines. Production calculations of weft knitting.

UNIT-III WEFT KNITTED STRUCTURES 9 + 3 Hours

Conce

Weft knit structures-Technical terms and symbolic representation of weft knit structures- Characteristics of plain, rib, Interlock, purl knit structures- Fundamentals of formation of knit, tuck and float stitches- Pattern wheel, pattern drum, punched steel tape needle selection mechanism- Derivatives of weft knit structures: lacoste, accordion and check effect -Faults in knitted fabrics and their causes and remedies.

UNIT-IV WARP KNITTING 9 + 3 Hours

Conce

Warp knitting machines: needle bar, sinker bar, guide bar -Warp knitting fundamentals- Knitting cycle for warp knitting- basic warp knitted structures- closed lap and open lap stitches - Raschel and Tricot knitting machines- Comparison of raschel and tricot knitting machines- Representation of warp knit structures. Materials for warp knitting-direct warping and indirect warping for warp knitting- Production calculations of warp knitting.

UNIT-V SEAMLESS KNITTING AND KNITTED FABRIC APPLICATIONS 9 + 3 Hours

Conce

Seamless knitting machine: working and its advantages- Application of weft and warp knitted fabrics in technical textiles like- hoses, gloves, agro textiles, medical textiles, sports textiles. Comparison of weft and warp knitting industries in India.

TOTAL: 45 +15 HOURS

TEXT BOOKS:

1. D. B Ajgaonkar., "Knitting technology" Universal publication corporation, Mumbai, 1998.
2. Dr.N.Anbumani., "Knitting Fundamentals, Machines, Structures and Developments", New Age International, 2006.

REFERENCES:

1. Chandrasekhar Iyer, Bernd Mammel and Wolfgang Schach, "Circular knitting", Meisenbach Gmbh, Bamberg, 1995.
2. D.J. Spencer., "Knitting technology", Textile Institute Manchester, 1989.
3. Samuel Raz., "Warp knitting production", Melliand Textilberichte Gmbh, 1987.

TTX115 MECHANICS OF TEXTILE MACHINERY 3 1 0 4

Objectives:

- To gain knowledge about various design concepts on shedding tappets, speed frame cone drums and ring frame shaper cams.
- To know about power transmissions
- To acquire knowledge about application of principle of moments on various textile machineries

UNIT - I DRIVES 9 + 3 Hours

Conce

Belts and Ropes- Drive Speed Ratio – Centrifugal tension condition for maximum power transmission and speed – PIV drives – Electro Magnetic Drives. Gears Nomenclature-Velocity Ratio-Speed calculations- Epicyclic gear trains – speed ratio of differential motion.

UNIT - II CAMS 9 + 3 Hours

Conce

Scutcher cone drum profile design and construction. Fly frame cone drum profile design and construction. Cams used in Textile machines – Design of Ring frame builder motion cam, Plain and Twill cams for tappet looms.

UNIT - III MOTION 9 + 3 Hours

Conce

Equation of motion – Linear – Reciprocation – Oscillation movements, Equation of force – Mass – Momentum – Work – Power – Shuttle Velocity – Picking force and power – ring frame traveler velocity and power consumption.

UNIT - IV FORCES 9 + 3 Hours

Conce

Kinetic and potential energy calculation for textile application – Principles of moments- Scutcher calendar roller – Ring frame Top arm loading – Forces in heald reversing system.

UNIT - V BRAKES AND CLUTCHES 9 + 3 Hours

Conce

Friction: Static, Dynamic and Coil friction – Coefficient of friction – Frictional force and power – Warp tension calculation. Clutches: Single plate – Multiple plate – Cone Clutches, Band and block Brakes – Internal expanding shoe Brakes – Sley displacement – eccentricity relation with crank radius and connecting arm length – velocity – Acceleration – Beat-up force.

TOTAL: 45+15 HOURS

TEXT BOOKS:

1. Slater K., “Textile Mechanics, Vol. I & II” Textile Institute, Manchester, UK, 1997.
2. Booth J E., “Textile Mathematics, Vol. I, II & III” Textile Institute, Manchester, UK, 1977.

REFERENCES:

1. Faires V.M., “Design of Machine Elements”, Macmillan & Co, London, 1967.
2. Grosberg P, “Introduction to Textile Mechanics”, Ernest Benn Ltd, London,1968.

TTX116 NONWOVENS AND SPECIALTY TEXTILES 3 0 0 3

Objectives:

- To gain knowledge about the nonwoven technology.
- To impart knowledge on the nonwoven process and applications.
- To gain knowledge about coated and laminated textiles.
- To get exposure on the production of specialty fabrics.

UNIT - I NONWOVENS –INTRODUCTION 9 Hours

Definition, classification of nonwoven fabrics, wet and dry method of web preparation. Fibre orientation in the web. Opening and cleaning machines. Machines for the production of parallel laid. Cross laid and random laid webs. Fibres used in nonwoven industry.

UNIT - II BONDING AND FINISHING OF NONWOVENS 9 Hours

Technology of bonding webs of mechanical, thermal, chemical and spun lace methods. Production of bonded, melt blown and spun bonded nonwoven fabrics**.** Dry and wet finishing of nonwoven fabrics. Various end uses of nonwoven fabrics. Testing of nonwoven materials.

UNIT - III COATED AND LAMINATED FABRICS 9 Hours

Coating by direct method - Foam finishing - foamed and crushed foam coating - Transfer coating - coagulated polyurethane coating - ball licking roller technique - hot melt extrusion coating - calendar coating - rotary screen coating - fabric impregnation method. Testing for adhesion, Flexing, Abrasion resistance. Lamination techniques – Flame, Hot melt. Lamination machines – types, advantages, disadvantages.

UNIT - IV NARROW FABRICS 9 Hours

Woven narrow fabrics and their constructions – Production of narrow fabrics on shuttleless looms. Types and application of narrow fabrics. Foot Wear Fabrics: Requirements - toe, puff, stiffness laces - uppers - General Shoe making methods.

UNIT - V FUNCTIONAL FABRICS 9 Hours

Elasticated fabrics, zip fastener tapes, curtain heading tapes, ladder tapes, trimmings, braids, labels, nets, laces, flocked fabrics. Carpet: Non-pile carpet weaves and their looms. Pile surfaced carpet weaves and their production. Felted fabrics: Manufacture of forming fabrics – raw material selection, heat setting, seaming, finishing.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Albrecht. W, Fuchs. H, Kittelmann and Walter, “Nonwoven Fabrics- Raw Materials, Manufacture, Applications, Characteristics, Testing Processes”, Wiley-VLH, 2002,
2. Walter Fung, “Coated and Laminated Textiles”, Wood head publishing Limited, Cambridge, England, 2000.

REFERENCES:

1. Lunenschloss, J and W. Albrecht., “Nonwoven bonded fabrics”, Ellis Horwood, London, 1985.
2. Dharmadhikary R. K. Gilmore, T. F, Davis H. A. K and Batra S. K., “Thermal Bonding of Nonwoven fabrics”, Textile Progress, Textile Institute, Volume 26, No.2, 1995.
3. Krcma,R., “Manual of Nonwovens”, Textile Trade press, 1971.
4. Harrison. P.W.,"The Design of Textiles for Industrial Applications", Textile Institute, Manchester, 1998.
5. Pushpa,B., and Sengupta, A.K., "Industrial Application of Textiles for Filtration and Coated fabrics", Textile Progress Vol.14, 1992.

TTX117 HIGH PERFORMANCE FIBRES 3 0 0 3

Objectives:

- To gain knowledge on high performance fibres.
- To understand the production process of high performance fibres.
- To get exposure on recent developments of fibres.

UNIT- I ARAMID AND STEEL FIBRES 9 Hours

Requirements of high performance fibres. Aramid fibre - Formation – Structure – Properties and performance. Steel fibre - Formation – Structure – Properties and performance. Product development areas and applications of these fibres.

UNIT- II CARBON AND GLASS FIBRES 9 Hours

Classification of Carbon fibres - Manufacturing processes from Polyacrylonitrile (PAN), Rayon and Pitch based fibres - Properties and Applications. Glass fibres - Types and composition - manufacturing processes - Fibre structure - Properties - Applications.

UNIT- III CERAMIC, ELASTOMERIC AND PBI FIBRES 9 Hours

Ceramic fibres – classification, fibre formation, composition, structure, properties and applications. Elastomeric (Polyurethane) fibres - manufacturing processes - Properties - Applications. Polybenzimidazole (PBI) - Fibre formation, structure, properties and applications.

UNIT- IV SULPHUR BASED FIBRE AND METALLIC FIBRES 9 Hours

Polyphenyl sulphide fibres - Fibre formation - Properties - Applications. Metallic fibres - Aluminium Oxide fibres - Preparation and manufacturing process - Fibre structure - Properties - Applications – Composites of Aluminium Oxide fibres. Lead fibres – Fibre Preparation - Structure - Properties - Applications - Sound Control and Radiation Shielding Materials.

UNIT- V NEW FIBRES 9 Hours

Polystyrene based fibres - Preparation - Properties – Applications. Micro fibres- Preparation – Properties; Bio-absorbable fibres from Cotton, Rayon, Poly Lactic Acid (PLA); Nano-fibres, Ultra-fine fibres, Hollow fibres and its uses. Optical fibres, Silica fibres- Manufacture and applications.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Mukhopadyay S.K., “High Performance Fibres”, Textile Progress, Textile Institute, Manchester, Vol. 25, 1993.
2. Menachem Lewin and Jack Preston., “High Technology fibers - part B”, Marcel Dekker, New York, 1989.

REFERENCES:

1. Gupta V.B. and Kothari V.K., “Manufactured Fibre Technology”, Chapman Hall Publishing Company,1997.
2. Anand S.C., “Medical textiles: Proceedings of the 2nd International conference” Bolton, UK. 2001.
3. Menachem Lewin & Jack Preston, “High Technology Fibres - Part A”, Marcel Dekker, New York, 1985.

TTX406 CLOTH ANALYSIS LABORATORY 0 0 3 1

LIST OF EXPERIMENTS

1. Analysis of Plain / Twill / Satin / Sateen fabric.
2. Analysis of Honey comb fabric.
3. Analysis of Huck-a-Back fabric.
4. Analysis of Extra Warp / Extra Weft fabric.
5. Analysis of Pile Fabrics (Warp & Weft)
6. Analysis of Welts and Pique fabric.
7. Analysis of Backed Fabrics.
8. Analysis of Double cloth.
9. Analysis of Crepe fabric.
10. Analysis of Mock Leno fabric.
11. Analysis of Single jersey knitted fabric.
12. Analysis of Double jersey knitted fabric.

Analysis includes Design, Draft, Peg Plan and determination of Construction Details like warp and weft count, EPI, PPI, Crimp, Cover factor.

TTX407 KNITTING AND GARMENT LABORATORY 0 0 3 1

LIST OF EXPERIMENTS

1. Production calculations of Single Jersey Knitting Machine.
2. Determination of tightness factor for a produced single jersey fabric.
3. Prepare samples from Single Needle lock stitch machine with different stitch lengths and study of parts and threading.
4. Determination of stitch length in Double track knitting machine.
5. Production of samples with different stitch lengths using Lock stitch machine and study of parts and threading.
6. Construction of chain stitches with 3 thread/4 thread over lock machine.
7. Construction of chain stitches with 3 thread/4 thread flat lock machine.
8. Preparing samples for seams and seam finishes.
9. Developing pattern for ladies wear.
10. Developing patterns for “T” shirt.
11. Developing embroidery stitches and designs.
12. Construction of simple garments and calculation of the sewing thread consumption.

GHE-106 - HUMAN EXCELLENCE- NATIONAL VALUES 0 0 2 1

Syllabus for VI Semester

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

GHE106 COMMUNICATION SKILLS LABORATORY 0 0 2 1

Listening Comprehension

a) Listening - sequencing of sentences
b) Filling in the blanks
c) Listening and answering the questions

Speaking

a) Phonetics

Intonation, Ear Training, Correct Pronunciation, Sound recognition exercises, Common Errors in English

b) Conversations

Face to Face Conversation, Telephone conversation, Role play activities

Structuring the resume

Report Writing

Letter writing

E-mail communication

Elements of an effective presentation, Structure of a presentation

Presentation - Tools – Voice Modulation – Audience analysis – Body Language

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

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

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

TTX118 PROCESS CONTROL IN SPINNING AND WEAVING 3 0 0 3

Objectives:

- To gain knowledge in process control procedures in spinning and weaving.
- To get exposure in process control parameters and norms
- To know the importance of process control in spinning and weaving process.

UNIT-I CONTROL OF FIBRE QUALITY 9 Hours

Quality control of mixing through fibre quality characteristics – Fibre Quality Index – Blending Irregularity – Fibre Rupture Analysis – Causes of nep generation – nep removal in carding and combing machines – On line monitoring – Control of soft waste – Soft waste addition in mixing.

UNIT-II CONTROL OF YARN REALIZATION & WASTE 9 Hours

Yarn realization – Cleaning efficiency in blow room, card – Control of waste in blow room, carding and comber – Control of hard waste in ring frame and cone winding - Invisible loss and its impact – quality Indices - RH% and its importance- productivity calculations.

UNIT-III YARN QUALITY CONTROL 9 Hours

Within bobbin, between bobbin count variations – Importance of controlling C.V% in preparatory departments – Unevenness causes – control of Unevenness- Hairiness and its control – Drafting waves – Periodic variation – Spectrogram analysis calculation – Yarn Faults – Classification – Causes, methods to reduce faults – Strength C.V% and its control - End breakage – causes – Snap study – Measures to control end breakage.

UNIT-IV PROCESS CONTROL IN WEAVING PREPARATOY 9 Hours

Process control in Winding - Quality of Knots and Splices- quality of package - control of hard waste -Yarn Quality requirements for shuttle and shuttleless looms. Process Control in Warping - warping and Sectional Warping – Performance, Process Parameters - minimizing end breaks - Quality of warper's beam - control of hard waste. Process control in sizing - control of size pick up, yarn stretch and moisture. Quality of sized beam. control of hard waste. Process control in drawing-in and warp tyeing.

UNIT-V CONTROL OF FABRIC QUALITY 9 Hours

Process and quality control in loom shed: Loom efficiency, Factors influencing loom efficiency, hard waste. Fabric Defects and their Control. Ambient Conditions - Grey Cloth Realisation. Process control in shuttleless weaving process – Projectile, Airjet, Water jet and Rapier Looms.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Garde. A. R. & Subramaniam T. A., "Process Control in Spinning", ATIRA, Ahmadabad 1987.
2. M.C.Paliwal & P.D. Kimothi., "Process Control in Weaving", ATIRA, Ahmedabad, 1974.

REFERENCES:

1. Van der Sluijs M and Hunter L., “Neps in Cotton Lint”, Textile Progress Volume:2 Number:4, The Textile Institute, Manchester, U.K., 1999.
2. Ratnam T.V. & Chellamani. K. P., “Quality Control in Spinning”, SITRA Coimbatore 1999.
3. “Loom shed”, BTRA Publication, Mumbai, 1986.
4. “Warping and Sizing”, BTRA Publication, Mumbai, 1983.
5. “Winding”, BTRA Publication, Mumbai, 1986.

TTX 119 TECHNICAL TEXTILES 3 0 0 3

Objectives:

- To get exposure about the textile usage in technical textiles.
- To gain knowledge in various sectors of technical textiles.
- To impart knowledge of manufacturing of technical textiles.

UNIT – I INTRODUCTION 9 Hours

Technical Textiles: Definition and scope of technical textiles, Classification of technical textiles, Future of the technical textiles industry. Fibres used in Civil and agricultural engineering, Automotive and aeronautics, Medical and hygiene applications, Protection and defence applications. Technical yarns: staple yarns, monofilament, multifilament yarns. Technical fabrics: knitted, woven and nonwoven structures.

UNIT - II AGRO TEXTILES AND FILTRATION TEXTILES 9 Hours

Agro textiles**:** Fibres, Fabric Construction details – Properties and applications. Textiles in Filtration**:** Dust collection, Fabric construction, finishing treatments. Solid-Liquid Filtration: Yarn types and fabric constructions, Production equipment, finishing treatments, fabric test procedure.

UNIT - III GEOTEXTILES AND MEDICAL TEXTILES 9 Hours

Textiles in Civil Engineering**:** Geosynthetics, Geotextiles, Essential properties of geotextiles, engineering properties of geotextiles, Frictional resistance of geotextiles. Medical Textiles: Fibres used Non-implantable materials, Extra-corporeal devices, Implantable materials, and Healthcare / hygiene products.

UNIT - IV PROTECTIVE TEXTILES 9 Hours

Protective Textiles: Criteria for modem military textile materials, Textiles for environmental protection, Thermal insulation materials, Water vapour permeable and waterproof materials, Military combat clothing systems, Camouflage concealment and deception, Flame-retardant, heat protective textiles, Ballistic protective materials, Biological and chemical warfare protection.

UNIT - V TRANSPORTATION TEXTILES 9 Hours

Textiles in Transportation**:** Textiles in road vehicles: car seat, air bag, seat belt, filters, carpets Textiles in Rail applications, Textiles in aircraft and marine applications. Belts, Tyre cords, Hoses: Construction particulars, Fibres and yarns used.

TOTAL: 45 HOURS

TEXT BOOKS:

1. A.R. Horrocks & S.C. Anand (Edrs.), “Handbook of Technical Textiles”, The Textile Institute, Manchester, U.K., Woodhead Publishing Ltd., Cambridge, England, 2000.
2. S. Adanur “Wellington Sears Handbook of Industrial Textiles”, Technomic Publishing Co. Inc., Lancaster, Pennsylvania, 1995.

REFERENCES:

1. N.W.M. John, “Geotextiles”, Blackie, London, 1987.
2. S.K. Mukhopadhyay and J.F. Partridge, “Automotive Textiles”, Text. Prog, Vol. 29, No.1/2, 1998.
3. S. Anand, “Medical Textiles”, Textile Institute, 1996.

TTX 120 GARMENT TECHNOLOGY 3 1 0 4

Objectives:

- To gain knowledge about pattern making and grading.
- To get exposure in the garment manufacturing process.
- To attain knowledge in sewing techniques and sewing machineries.

UNIT-I PATTERN MAKING 9+3 Hours

Pattern making: Definition- Head theory- Measuring of sizes and Size chart-Seam allowances-Drafting, Grading and Draping- Grain lines- Dart. Development of patterns: Kids wear: Baby's frock- Children Wear: Plain skirt- Men's wear: Shirt and Trouser- Women's wear: Salwar-kameez. Pattern making using CAD.

UNIT - II CUTTING 9+3 Hours

Marker planning: Requirements and Methods-Marker efficiency-Advantages of computer aided marker planning. Spreading: Requirements and Methods-Types spreading and lay. Cutting: Objectives-methods- cutting machines-computer controlled cutting.

UNIT - III SEWING 9+3 Hours

Sewing: Definition of Stitch and Seam- Types Stitch and Seam- Needles: Parts, sizes and classification- Threads: quality requirements, fiber types, construction, finishes, packages and ticket number –Stitch and seam defects. Sewing machinery: Basic sewing Machines- Drop feed system and Classification.

UNIT - IV PRODUCTION SYSTEMS 9+3 Hours

Basic production systems: Plant layouts (process/product)-Progressive bundle system (PBS)-Unit production system (UPS)-Modular production system (MPS)-Flexible manufacturing –Work flow -Balancing-Buffer. Pressing: Purpose -Categories - Means- Equipments and methods-Pleating- Permanent press. Packing : Types and components.

UNIT - V TRIMS AND ACCESSORIES 9+3 Hours

Trims and Accessories: labels and motifs-linings-interlinings- fusible interlinings- wadding-laces- braid- elastic, hook and loop fastening-Tape- shoulder pads- zip fasteners – buttons - snap fasteners and rivets- eyelets. Fusing: Means and equipment.

TOTAL: 45 +15 HOURS

TEXT BOOKS:

1. Harold Carr and Barbara Latham, "The Technology of clothing manufacture", 4th Edition Wiley-Blackwell, 2008.
2. K.R.Zarapkar, " System of cutting", Navneet Publications, Mumbai,2005.

REFERENCES:

1. Jacob Solinger, "Apparel Manufacturing Handbook", Van Nostrand Reinhold Company, 1980.
2. Hayden Peggal, "The Complete Dress Maker", Marshal Cavendish, London, 1984.
3. Laing R.M. and Webster J,"Fundamentals of stitches and Seams", Textile Institute, 1998.
4. Gerry Cooklin, Steven George Hayes and John McLoughlin, "Introduction to Clothing Manufacture", Wiley-Blackwell, 2006.

TTX121 TEXTILE COSTING 3 0 0 3

Objectives:

- To gain knowledge about various types of costing and its elements.
- To get exposure in costing of textile products.
- To understand the concept of costing.

UNIT - I INTRODUCTION 9 Hours

Costing: Aims of costing- Types of costing- Aims of estimation - Difference between Estimation and Costing - Types of estimates.

UNIT - II ELEMENTS OF COST 9 Hours

Elements of cost –Fixed cost, Variable cost- Material cost – Labour cost – Different types of expenses – Cost of product – Advertisement cost. Selling cost and pricing, Full-cost pricing, Marginal cost pricing. Cost sheet.

UNIT – III COSTING STRATEGY 9 Hours

Analysis of over head expenses – Factory expenses – Administrative expenses – Selling and distribution expenses – Allocation of over head expenses – Depreciation – Reasons for depreciation – Methods of calculating depreciation –Break even analysis - Simple calculations.

UNIT - IV COSTING OF TEXTILE PRODUCTS 9 Hours

Yarn costing - Fabric Costing - Garment costing - Costing of fabric processing – Factors that determine the price of garments –Cost of components - CMT (Cutting, Making & Trimming) Cost – Making and trim cost, simple cost calculations.

UNIT - V COSTING OF ACCESSORIES 9 Hours

Packing and labeling cost – different types and functions – Cost of bought out components. Shipment cost - Duty drawback. Cost calculation of Ladies and Men and Children's wear – Woven and Knitted - Simple calculations.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Lall Nigam B.M and Jain I.C., "Cost accounting: Principles & practice Prentice Hall India, 2000.
2. Jain S.P., Narang.K.L., "Elements of Cost Accounting", Kalyani publishers, 2000.

REFERENCES:

1. Johnson Maurice, E. Moore, "Apparel Product Development", Om Book Service, 2001.
2. Katherine McKelvy, "Fashion Source Book", Om Book Service, 2001.
3. Jain S.P., Narang, K.L., "Cost Accounting –Principles and Practice", Kalyani Publishers, 2009.
4. Deakin & Maher "Cost accounting", 3rd edition, Irwin publications, 1991.

GSS 104- PRINCIPLES OF MANAGEMENT AND TOTAL QUALITY MANAGEMENT 3 0 0 3

Objectives:

- To understand the managerial functions like planning, organizing, staffing, leading and controlling
- To understand TQM concepts and tools

UNIT- I PLANNING 9 Hours

Contributions of F.W. Taylor and Henri Fayol, Nature and Purpose of planning – Steps involved in Planning – Types of plans – Plans at Individual, Department and Organization level – Managing by Objectives.

UNIT- II ORGANIZING 9 Hours

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

UNIT- III DIRECTION AND CONTROLLING 9 Hours

Nature and Purpose – Manager Vs. Leader – Motivation – theories and techniques of motivation. Leadership – styles and theories of leadership. Communication – Process – Types – barriers – Improving effectiveness in Communication. Controlling – Nature – Significance – Tools and Techniques.

UNIT- IV TOTAL QUALITY MANAGEMENT CONCEPTS 9 Hours

Definition of quality, Dimensions of Quality, Quality Costs, Quality Statements, Contributions of Deming, Juran and Crosby, ISO 9000:2008 elements.

UNIT- V TQM TOOLS 9 Hours

Benchmarking , Quality Function Deployment (QFD), Taguchi Quality Loss Function, Total Productive Maintenance (TPM), FMEA, 5S, Kaizen, The seven tools of quality, New seven management tools.

TOTAL: 45 HOURS

TEXT BOOKS

1. Harold Koontz & Keinz Weihrich., "Essentials of Management" – An International Perspective", 8th Edition, Tata McGraw-Hill, 2009.
2. Dale H. Besterfiled, "Total Quality Management", Pearson Education, Inc., (Indian Reprint 2004).

REFERENCES:

1. Tripathy PC and Reddy PN., "Principles of Management", Tata McGraw-Hill, 4th Edition, 2008
2. Dinkar Pagarem., "Principles of Management", Sultan Chand & Sons, 2000
3. Kanagasapapathi. P., "Indian Models of Economy, Business and Management", Prentice Hall of India, New Delhi, ISBN: 978-81-203-3423-6., 2008.
4. G.K. Vijayaraghavan and M. Sivakumar., "Principles of Management", Lakshmi Publications, 5th Edition, 2009.

5. Charles W.L. Hill and Steven L McShane., "Principles of Management, Tata Mc Graw – Hill, 2009.
6. James R. Evans & William M. Lidsay., "The Management and Control of Quality", (2008), South-Western (Thomson Learning), 2008.
7. Feighenbaum., A.V., "Total Quality Control", McGraw Hill, New York, 1993.
8. Oakland J.S., "Total Quality Management", Butterworth – Hcinemann Ltd., Oxford 2004.
9. Narayana V. and Sreenivasan N.S., "Quality Management – Concepts and Tasks", New Age International, New Delhi, 2007.
10. Zeiri., "Total Quality Management for Engineers", Wood Head Publishers, 2000.

TTX408 TEXTILE AND APPAREL CAD LABORATORY 0 0 3 1

LIST OF EXPERIMENTS

1. Developing motif using software tools.
2. Prepare cut parts of garment.
3. Sketch and design of given virtual garment.
4. Developing a dobby design for checked fabric & prepare a 2D simulation
5. Developing a Jacquard design & Prepare a 2D simulation
6. Developing a Print design, make screen for individual colours
7. Developing a Print design with repeats for all over print.
8. Developing design, pattern and marker plan for "T" shirt. Calculate the marker efficiency.
9. Developing design, pattern and marker plan for children's wear. Calculate the marker efficiency.
10. Developing design, pattern and marker plan for a ladies top. Calculate the marker efficiency and develop a lay plan.
11. Developing design, pattern and marker plan for a ladies skirt.
12. Developing design, pattern and marker plan for men's formal shirt.

TTX409 TESTING OF TECHNICAL TEXTILES LABORATORY 0 0 3 1

LIST OF EXPERIMENTS

1. Determination of the construction particulars and tensile strength, Elasticity of compressive bandage cloth.
2. Determination of absorbency, purity through whiteness value of incontinence surgical cotton and bandage cloth.
3. Analysis of construction particulars and strength of tyre cord fabric.
4. Analysis of construction details and strength of suture threads.
5. Analysis of construction particulars and air permeability of surgical gowns.
6. Determination of air permeability and water vapour permeability of bandage materials.
7. Preparing a reinforced composite material using hot molding method
8. Determination of construction particulars and strength of Geo-textile materials.
9. Determination of flame retardancy of given fire-proof material
10. Determination of water proof and water repellency of Rain-proof materials.
11. Determination of construction particulars and air permeability of filter fabrics.
12. To analyse the effect of plasma treatment on Cotton/Polyester/Polypropylene materials.

GHE-107 - HUMAN EXCELLENCE- GLOBAL VALUES **0 0 2 1**

Syllabus for VII Semester

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

TTX201 MECHANICAL PROCESSING OF MAN MADE FIBRES AND THEIR BLENDS 3 0 0 3

Objectives:

- To understand the processing of manmade fibre and its blends.
- To attain knowledge in processing of manmade fibre in short staple spinning.
- To get exposure about process parameters in manmade fibre spinning process.

UNIT-I TOW TO TOP CONVERSION 9 Hours

Tow to top and tow to yarn conversion: Tow to sliver breaking-Machine used for stretch. Breaking - process details-effect of machine variables on fibre length distribution. Tow to sliver cutting: Methods-machines-process details. Tow to yarn spinning: Principles, methods- process details.

UNIT-II SPINNING OF SYNTHETICS AND ITS BLENDS 9 Hours

Spinning of viscose staple, polyester staple, Nylon, Acetate, Acrylic, Polyester/viscose, Polyester/cotton, and cotton/viscose: Bale opening and tinting, blending, opening, carding, preparation of roving and ring spinning.

UNIT-III SPINNING OF POLYESTER/WOOL BLENDS 9 Hours

Process of polyester/wool blends: Blending-opening, picking-roller and clearer cards-Gill box Drawing, spinning, Throwing of continuous filament yarns; Definition-objects-preparation-winding or spooling, spinning and twist setting.

UNIT-IV WEAVING PREPARATION 9 Hours

Weaving preparation; Filaments – synthetic blends-warp and weft yarn winding machines-speed, package size and shape-tension-stretch-size ingredients-size recipe-size pickup for synthetics and their blends.

UNIT-V WEAVING OF SYNTHETICS 9 Hours

Weaving of synthetic and its blend yarns - Common defects in synthetic fabrics. Weaving of polyester/wool blends. Process requirements for synthetics and its blend in the shuttleless weaving system.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Salhotra K.R., “Spinning of Manmade fibres and their blends on cotton system”, Textile Association (India) Publications, 2004.
2. Pattabhiram TK, “Synthetic weaving”, Mahajan Publishers, Ahmedabad, 1976.

REFERENCES:

1. Wray F. R, “Modern yarn production”, columbine press London, 1982
2. Kulkarni GG, “Processing of polyester/cotton blends”, ATIRA, 1967.
3. Andrea Wynne, “Motivate series in Textiles”, Macmillan Education Ltd., London, 1997.

TTX202 TEXTURIZING TECHNOLOGY 3 0 0 3

Objectives:

- To impart knowledge about texturization process.
- To get knowledge about various texturization techniques.
- To get exposure about application of textured yarns

UNIT - I BASICS OF TEXTURIZATION 9 Hours

Need for bulking of synthetic fibres – texturing – basic definition and classifications – developments in high speed spinning – POY.

UNIT - II DIMENSIONAL STABILITY 9 Hours

Heat setting – need-factors involved – types of setting – effects on fibre morphology and mechanical properties – fundamentals of thermo-mechanical texturing – Helanca process.

UNIT - III TEXTURIZATION TECHNIQUES 9 Hours

Basics of false-twist texturing-texturability of various fibres-process parameters – time, temperature, twist, tension suitability of POY and UDY for FT texturing – Draw texturing – simultaneous and sequential draw texturing – twisting devices – testing of textured yarns.

UNIT - IV AIR JET TEXTURIZATION 9 Hours

Basics of air jet texturing – types of yarns produced – feed material structure and properties of air-jet texturing machines, nozzles, evaluation of air-jet textured yarn vis-à-vis spun and filament false twist textured yarns.

UNIT - V DEVELOPMENTS IN TEXTURIZATION METHODS 9 Hours

Stuffer box and edge crimping methods – principles, limitations, and applications – knit-de-knit and gear crimping methods. Bi-component filament texturing – texturing of polypropylene and jute fibres – Chemo-mechanical and thermo-mechanical texturing.

TOTAL: 45 HOURS

TEXT BOOK:

1. Hes L. Ursiny P., “Yarn Texturing Technology”, Eurotex, U.K., 1994.
2. Behery H.M. and Demir A., “Synthetic Filament Yarn Texturing Technology”, Prentice Hall, 1996.

REFERENCES:

1. Gupta V.B. and Kothari V.K.,“Manufactured Fibre Technology”, Chapman Hall Publishing Company, 1997.
2. Wilson D.K. and Kollu T., “Production of Textured Yarns by False Twist Technique”, Textile Progress, Vol. 21, No.3, Textile Institute, Manchester, U.K., 1991.
3. Wilson D.K. & Kollu T., “Production of Textured Yarns by Methods Other than False Twist Technique”, Textile Progress Vol. 16, No.3. Textile Institute, 1981.
4. Guirajani M.L. (Edr.), “Annual Symposium of Texturing”, I.I.T Delhi, 1977.
5. Demir & H. El-Behery, “Synthetic Yarn Production”, Prentice Hall Inc., 1996.
6. V.Usenko, “Processing of Manmade Fibres”, Mir Publishers,1979.

TTX203 LONG STAPLE SPINNING 3 0 0 3

Objectives:

- To attain knowledge about the processing of unconventional natural fibres.
- To gain knowledge about wool and silk processing.
- To gain knowledge about bast fibre processing.

UNIT - I UNCONVENTIONAL FIBRES 9 Hours

Long Staple Fibre: Protein fibres and cellulosic fibres (wool, Silk Jute and Flax only). Long staple fibre characteristics-sorting - grading. Unconventional Natural Fibres: Pineapple-coir-jute sisal-leaf fibres. Numbering systems for long staple fibres and their conversions.

UNIT - II WOOL SPINNING 9 Hours

Manufacturing Processes of Wool: Preparation - scouring - Drying - oiling - Dyeing. Blending. Roller and clearer cards. Gilling and combing - Drawing - Roving – Spinning. Process parameters of wool.

UNIT-III WORSTED SPINNING 9 Hours

Scouring, composition of scouring, pre-opening, blending, opening and beating, weight check, carding: Roller and clearer cards-Combing-Gill box Drawing, spinning. Comparison with cotton carding machine.

UNIT - IV SPUN SILK PROCESSING 9 Hours

Manufacturing Process of Silk: Cultivation and Rearing of cocoons – filature operations-Throwing. Degumming. Winding - twisting - rewinding- remodified.

UNIT - V SPINNING OF BAST FIBRES 9 Hours

Manufacturing Process of Bast Fibres: Preparation of the fibres - Retting. Breaking – Scutching-Hackling (combing) – spinning.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Lord P.R., “Hand book of Yarn Production: Technology, Science and Economics”, Woodhead Publishing Limited, 2003.
2. Lawrence C.A., “Fundamentals of Spun Yarn Technology”, Woodhead Publishing Limited, 2003.

REFERENCES:

1. Corbman.B.P "Textiles: Fibre to fabric", McGraw Hill, Edn.1983.
2. Eric Oxtoby, "Spun Yarn Technology", Butterworths, London, 1988.
3. Mukherjee RR & Radhakrishnan "Long Vegetable Fibres", Text. Prog. Vol.4 No.4, Text.lnst. Manchester 1972.
4. Sonwalkar T.N., "Hand Book of Silk Technology", Wiley Eastern Ltd. , Bombay, 1992.
5. Stout H.P., "Fibre and Yarn Quality in Jute Spinning", The Text. Inst., Manchester, 1988.
6. Ezio Carissoni, Stefanno Dotti, Franco Fleiss, Luigi Petaccia and Lucia Pieri, “Spinning-cotton and wool spinning”, ACIMIT,2002.

TTX204 WORK STUDY IN TEXTILE INDUSTRY 3 0 0 3

Objectives:

- To understand the work study and method study techniques.
- To get exposure about productivity terms and terminologies.
- To know about the application of work study in textile industry.

Unit I: PRODUCTIVITY 9 Hours

Productivity in textile and apparel industry: units of productivity - total time to do a job – factors affecting productivity – work content and total time – reducing work content due to the product and process method – reducing ineffective time due to worker and supervision.

Unit II: WORKSTUDY 9 Hours

Work Study: definition, work-study and productivity - basic procedure of work-study – work study and the worker, supervisor and the management - working condition and the working environment.

Unit III: METHOD STUDY 9 Hours

Method study: definition and objects of method study – basic procedure, selection of work, Recording, examining, development of method – Textile / Apparel factory lay out and movement of workers and material - string diagram – man type flow process chart – multiple activity chart – travel chart – principle of motion economy – classification to movements – two-handed process chart – micro motion study – SIMO chart – Define, installs and maintain improved method.

Unit IV: WORK MEASUREMENT 9 Hours

Work measurement: definition, purpose, procedure and uses – techniques of work measurement – work sampling: need and use time study – definition – basic time study equipment – time study forms – selecting the job, steps in making a time study – breaking the job into elements – sample size, timing card element – stop watch procedure - time study rating – calculation of standard time – setting time standards for work with apparel production machineries.

Unit V: APPLICATION OF WORKSTUDY 9 Hours

Application of work study technique in optimizing work load of ring frame sider / tenter, non-automatic and automatic winder, automatic loom and shuttle-less loom weaver – application of work study techniques in stitching activity in garment industry – comparative study of different manufacturing systems used in the garment production - group system, batch system – industrial system – productivity calculation in Stitching activity.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Johnson Maurice “Introduction to Work Study”, International Labour Organization, Geneva, 1995.
2. Jacco Solinger “Apparel Manufacturing Hand Book”, Reinhold Co., 1998.

REFERENCES:

1. Juan Crlo Hiba “Improving working conditions and productivity in the garment industry” International Labour Organization, Geneva, 1998.

TTX205 MAINTENANCE MANAGEMENT IN TEXTILE MILLS 3 0 0 3

Objectives:

- To understand various maintenance activities in textile mill.
- To acquire knowledge in inventory planning and management.
- To get exposure about the material handling equipments.

UNIT - I INTRODUCTION TO MAINTENANCE 9 Hours

Object of maintenance – types of maintenance- Organizational structure for 25,000 and 50,000 spindles spinning mill, composite mills and vertically integrated units- systems and procedure of maintenance- planning- scheduling- controlling- back logs rescheduling- roll of computer in maintenance management- Mill stores planning inventory control techniques- tools required for maintenance – general tools and specialty tools and gauges.

UNIT-II MAINTENANCE SCHEDULE 9 Hours

Maintenance schedule for blow room to autoconer in a spinning mill- maintenance schedule for TFO, Doubling Machine, Compact spinning machine, Rotor spinning machine, Air jet spinning machine, DREF Spinning machine- Maintenance schedule for preparatory machines in loom shed -auto looms and shuttle less looms-(projectile, rapier, air jet, water jet looms)- Maintenance schedule for Knitting machine- Maintenance schedule for wet processing machines-Kiers, washing machine, Jiggers, stenters, Calendaring machines, Soft flow dyeing machines.

UNIT - III POWER HOUSE MAINTENANCE 9 Hours

Maintenance of power house- transformers- Generators- Humidification plants - Maintenance for special motors-Servo motors- Gear motors – Fluid coupling motors - Stepped speed drive motor- Variable speed motors- Starters and switches- Compressors- Regulators- Driers- Pressure monitors- Over head cleaners- Maintenance of on line and off line monitors used in textile mills- Energy audit in textile mills.

UNIT - IV SPECIAL MAINTENANCE ACTIVITIES 9 Hours

Piano feed maintenance- Card grinding- Mounting- End milling – Flat burnishing- Cot buffing- Roller lapping prevention techniques-Berkolisation- Cot selection and mounting procedure- Spindle oiling – topping, replenishing- spindle and lappet gauging- top roller pressure setting- roller eccentricity measurement and removal methods- loom timing and setting procedure- causes and remedies for various defects in processing – Lubricants- Types- Properties- Selection of lubricant for different operations- various lubricating equipments and its applications- Textile bearings and selection – abrasives used in textile maintenance and their specifications – Maintenance of safety equipments- fire alarms- micro dust filters- fire extinguishers.

UNIT - V MODERNIZATION PROGRAMME 9 Hours

House keeping techniques- lay out planning- basic erection procedure for ring frame and looms- Maintenance audit- maintenance cost control- depreciation concepts- - replacement theory and concepts- calculation of replacement duration – Renovation Vs Modernization – investment decision tools, disposal procedure for scrap items.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Ratnam T.V. and Chellamani K.P., “Maintenance management in Spinning”, SITRA, Coimbatore, 2004.
2. “Spinning, Weaving and Processing Machinery Maintenance in Textile Mills”, TAIRO, Baroda, 1970.

REFERENCES:

1. “Maintenance Schedules, Practices, and Check points in Spinning” BTRA, Bombay, 1979.
2. Paliwal M C and Kimothy P D, “Process Control in Weaving”, ATIRA, Ahmedabad, 1983.
3. Balasubramaniyan.K and Manoharan J.S., “Maintenance management in weaving”, SITRA, 2008.

TTX 206 CLOTHING SCIENCE 3 0 0 3

Objectives:

- To gain knowledge about the comfort characteristics of fabric.
- To understand the Physiological and Field Testing of Clothing.

UNIT – I CONCEPT OF CLOTHING 9 Hours

Factors Involved in the Study of Clothing: Comfort – non-thermal components – units for description – Environmental ranges and clothing – Physiological indicators of comfort.

UNIT – II CLOTHING SYSTEM 9 Hours

Clothing System Interaction with the Body: Clothing as Quasi-physiological and air systems – Interaction with body – Heat regulation– Water accumulation – Effect of body motion, wind, conscious adjustments and radiation.

UNIT - III MOISTURE MANAGEMENT IN CLOTHING 9 Hours

Heat and Moisture Relations in Clothing: Different approaches – factors – model systems – tests on subjects – heat and moisture transmission properties of clothing and air

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UNIT - IV PHYSIOLOGICAL ANALYSIS OF CLOTHING 9 Hours

Physiological and Field Testing of Clothing: Subjective and human elements – Approaches for using subjects – Situations for living subjects measurements – Clothing insulation – test on human.

UNIT - V COMFORT PROPERTY OF CLOTHING 9 Hours

Physical Properties of Clothing and Comfort: Thermal resistance – Water vapour diffusion resistance – Water holding property – Effect of fabric properties – Radiation exchange – Flammability – Clothing with internal spaces.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Buchanan D.R, “The Science of Clothing Comfort”, Textile Progress, Vol.31, No.1/2, 1999.
2. Fourt L.and Hollies N.R.S., “Clothing – Comfort and Function”, Marcel Decker, New York, 1970.

REFERENCES:

1. Laing R.M., and Sleivert G.G., “Clothing, Textiles and Human Performance”, Textile Progress, Vol.32, No.2, 2002.
2. Ukponmwan J.O., “The Thermal Insulation Properties of Fabrics”, Textile Progress, Vol.24, No.4, 1992.
3. Slater K, “Comfort Properties of Textiles”, Textile Progress, Vol.9, No.4, 1977.

TTX207 PATTERN MAKING AND GRADING 3 0 0 3

Objectives:

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

UNIT - I BASIC PATTERN MAKING 9 Hours

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

UNIT - II DRAFTING 9 Hours

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

UNIT - III DRAPING 9 Hours

Draping - Tools for Draping. Draping skills – preparation of basic blocks- bodice, skirt sleeve, trouser ,cowl neck line and shawl collar.

UNIT - IV FLAT PATTERN TECHNIQUES 9 Hours

Dart Manipulation – basic techniques – pivot method, slash and spread, measurement method. Applications of dart manipulation – transferring, combining, dividing, converting into seams and fullness, shaped darts. Added fullness method.

UNIT - V PATTERN ALTERATION AND GRADING 9 Hours

Pattern alteration - definition, principles, techniques – Lengthening, shortening, widening, narrowing patterns according to required body measurements by slash and spread or slash and overlap methods. Grading – Definition, Principles and types –manual grading and computerized grading for bodice block, sleeve and skirt.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Helen Joseph Armstrong, “Pattern Making for Fashion Design” Pearson Education (Singapore) Pvt. Ltd., 2005.
2. Winifred Aldrich, “Metric Pattern Cutting” Blackwell Science Ltd.,1994.

REFERENCES:

1. Gillian Holman, “Pattern Cutting Made Easy”, Blackwell Scientific Publications, 1997.
2. Natalie Bray “More Dress Pattern Designing” Blackwell Scientific Publications, 1986.
3. Gillian Holman, “Pattern Cutting Made Easy”, Blackwell Scientific Publications 1997.
4. Gerry Cooklin, “Master Patterns and Grading for Women’s Outsizes”, Blackwell Scientific Publications, 1995.
5. Gerry Cooklin “ Master Patterns and Grading for Men’s Outsize”, Blackwell Scientific Publications,1992.
6. Jeenne Price and Bernard Zamkoff, “Grading Techniques for Modern Design Fairchild Publications, 1990.

TTX208 ORGANISATIONAL BEHAVIOUR 3 0 0 3

Objectives:

- To understand the organizational structure of the industry.
- To know about the foundations of individual and group behaviours.

UNIT - I INTRODUCTION TO ORGANISATIONAL BEHAVIOUR 9 Hours

Meaning of Organisational Behaviour- Contributing disciplines- Challenges and opportunities for Organisational Behaviour - Organisational Behaviour Model.

UNIT - II BEHAVIOURAL ATTITUDES 9 Hours

Foundations of individual behaviour- Attitudes- components – Job attitudes and job satisfaction. Personality – Meaning – Determinants –Personality traits – Personality attributes- Values – Types – Values across cultures. Learning – Definition – Theories – Shaping – Perception– Meaning – Factors.

UNIT - III MOTIVATION TECHNIQUES 9 Hours

Motivation – Meaning – Content and Process Theories – Application of motivation theories – leadership – Situational theories.

UNIT - IV GROUP BEHAVIOUR 9 Hours

Foundations of group behaviour – Classification- Stages of group development – Group properties- Teams – Types of teams – Creating effective teams .Conflict – Meaning – Views – Conflict process. Negotiation – Process – Bargaining strategies.

UNIT - V POWER TACTICS 9 Hours

Definition of Power – Bases of power – Power tactics .Politics. Definition – Factors contributing to political behaviour – Impression management-Organizational culture - functions – Creating and sustaining culture.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Robbins Stephen P., "Organisational Behaviour" 12th Edition Prentice Hall (India) Pvt., Ltd 2006.
2. Mcshane L.Steven Von Glinow Ann Mary Sharma R. Radha., "Organisational Behaviour" Tata McGraw Hill 2006.

REFERENCES:

1. Robin Fincham Peter Rhodes., "Principles of Organizational Behaviour" Oxford University Press 2005.
2. Bratton., "Work and Organizational Behaviour" Palgrave Macmillan 2005.
3. V.S.P Rao, "Organisational Behaviour", Excel Books, 2009.
4. Ivancevich M.John et.al "Organisational Behaviour and Management" 7th Edition Tata McGraw Hill 2005.
5. Angelo Kinicki Robert Kreitner., "Organisational Behaviour Concepts, Skills and Practices" Tata McGraw Hill 2006.
6. Mirza S Saiyadain., "Organisational Behaviour" Tata McGraw Hill 2003.

TTX209 TEXTILE PROJECT MANAGEMENT 3 0 0 3

Objectives:

- To gain knowledge on the concepts of project management.
- To understand the concept of investment decision making.
- To understand various project planning techniques
- To understand the basics of capital budgeting

UNIT - I PROJECT MANAGEMENT 9 Hours

Definition-Importance-Forms of project organization-Project Planning-Project control-Human aspects of project management. Prerequisites for successful project implementation- Various clearances from government agencies. Technical analysis. Market and demand analysis: Objectives-Secondary information-Market survey-Characterization- Demand forecasting-Market planning.

UNIT - II PROJECT PLANNING 9 Hours

Network analysis-CPM and PERT. Layout planning: Concept-Factors governing plant location-Types of layout- Flow pattern. Calculation of machinery requirement of spinning (Spin plan) and weaving factories. Equipment and plant selection- Machinery layout- Site and buildings: Size, Shape, Column spacing- Electrical Requirement-Lighting; Design consideration for humidification.

UNIT - III PROJECT COSTING 9 Hours

Elements of total project cost- Cost of Production and its calculations- Capital and running costs. Essential contents of feasibility study. Capital Budgeting: Capital budgeting process- Appraisal criteria and its calculations.

UNIT - IV FUND FLOW STATEMENT 9 Hours

Balance sheet: Contents-Projected balance sheet; Income statement: Contents-Projected income statement at projected production; Fund flow statement: Classification on the basis of Total resources, capital and cash. Case studies of projected income and cost of production of a project: Ginning unit-Spinning unit-Weaving unit- Textile Processing unit-Garment unit.

UNIT – V FINANCIAL STATEMENT ANALYSIS 9 Hours

Financial statement: Ratios of liquidity, leverage, turnover, profitability and valuation-Comparison with industry averages-Problems in financial statement analysis. Finance Institutions- Financial Procedure – Regulation of Bank Finance-Sources of long term finance. Stock market: Development-Functions-Trading arrangements- Stock market reporting.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Prasanna Chandra, “Project – Preparation, Appraisal and Implementation”, Tata McGraw Hill, New Delhi, 1990.
2. Prasanna Chandra, “Fundamentals of Financial Management” Tata McGraw Hill Publications, 1995.

REFERENCES:

1. Immer, J.R., “Layout Planning Techniques”, McGraw-Hill, New York, (1950).
2. Ormerod. A, “Textile Project Management”, Textile Institute, 1992.
3. O.P.Khanna, “Industrial Engineering and management”, Dhanpat Rai Publications, Reprint 2004.

TTX210 APPAREL MARKETING AND MERCHANDISING 3 0 0 3

Objectives:

- To gain knowledge on the different segments of apparel industry.
- To understand the Indian and international apparel marketing strategy.
- To gain knowledge about the export documentation.

UNIT - I ORGANIZATION OF THE APPAREL BUSINESS 9 Hours

Introduction to Indian and global apparel industry – Organization of the apparel industry — Business concepts applied to the apparel industry – Domestic and exports, types of exports. Objectives and functions of DJFT, AEPC and TEXPROCIL.

UNIT - II MARKETING 9 Hours

Marketing objectives and strategies. Marketing research – Types of markets: Retail and wholesale, strategies for merchandise distribution- Retailers' sourcing flows and practices - Marketing plan - Labeling and licensing. Functional organization of an apparel firm- Responsibilities of a marketing division.

UNIT - III MERCHANDISING 9 Hours

Definition of merchandising – functions of merchandising division – role and responsibilities of a merchandiser – different types of buyers – communications with the buyers – awareness of current market trends – product development, line planning – line presentation.

UNIT - IV SOURCING 9 Hours

Need for sourcing- sourcing materials- manufacturing resources planning – principles of MRP – Overseas sourcing – sourcing strategies. Supply chain and demand chain analysis – Materials management for quick response – Just In Time technology.

UNIT - V EXPORT DOCUMENTATION 9 Hours

Order confirmation, various types of export documents, pre-shipment and post-shipment documentation, terms of sale, payment and shipment. Duty drawback, DEPB, I/E license-exchange control regulation-foreign exchange regulation acts-export management risk-export finance. Functions and objectives of WTO-Concepts of GATT and MFA.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Elaine Stone, Jean A. Samples, "Fashion Merchandising", McGraw-Hill Book Company, ISBN: 0–07–061742–2., 1985.
2. S.Shivaramu. "Export Marketing" – A Practical Guide to Exporters", Wheeler Publishing, ISBN: 81-7544-166-6, 1996.

REFERENCES:

1. D. Sinha, "Export Planning and Promotion", IIM, Calcutta, 1981.
2. Tuhin K. Nandi, "Import–Export Finance", IIM, Calcutta, 1989.
3. J.A. Jarnow, M.Guerreiro, B.Judelle, "Inside the Fashion Business", MacMillan Publishing Company ISBN: 0-02-360000-4., 1987.
4. Ruth E.Glock, Grace I.Kunz, "Apparel Manufacturing: Sewn Product Analysis", Pearson Education, Fourth Edition, 2005.

TTX 211 TEXTILE COMPOSITES 3 0 0 3

Objectives:

- To gain knowledge about the composite materials and its applications.
- To understand the characteristics of reinforcement and matrix.
- To get exposure about the composite manufacturing technology.

UNIT-I: INTRODUCTION TO COMPOSITES 9 Hours

Composites- Introduction, Definition and classification –Structure of the matrix such as MMC, CMC and PMC. Reinforcement forms – Limitations of the conventional engineering materials such as metal, plastics and ceramics-Advantages of Composites over Conventional Engineering materials.

UNIT-II: MATRIX AND REINFORCEMENT 9 Hours

Matrix polymer-Thermosets, thermoplastics-Reinforcing agents-Types of reinforcing agents such as fibre, particulate and laminates-Fibre forms such as roving, yarns, fabrics. -Testing of Matrix and Reinforcement materials-Prepregs and preforms.

UNIT-III: MECHANICS OF COMPOSITES 9 Hours

Mechanical Properties of composites-Elasticity of Composites-Failure modes of Composites-Ply and orientation- Rule of Mixture and Property prediction-Fibre Volume fraction(FVF) and Fibre Mass Fraction(FMF)-Interface and interfacial reactions-Other properties of Composites such as Delamination and Fracture toughness-Compression behavior of Composites- Calculations in FVF, FMF and ply thickness.

UNIT-IV: COMPOSITES MANUFACTURING METHOD 9 Hours

Open Mould Techniques such as lay-up, Automatic Lay-up, Spray lay-up, Compression moulding, Injection moulding-Close Mould techniques such as Filament winding, Pultrusion, vacuum bagging, Resin transfer moulding. Thermoforming.

UNIT-V: COMPOSITES –TESTING AND APPLICATIONS 9 Hours

Destructive and Non-destructive testing –Tension- Shear-Compression-Bending- Application of Composites in areas such as aerospace, marine and building materials.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Guneri Akovali "Handbook of Composite Fabrication", Rapra Technology Ltd, 2003.
2. Autar K.Kaw , "Mechanics of Composite Materials", Second Edition, CRC press, 2006.

REFERENCES:

1. George H.Stab , "Laminar Composites", B-H publication,1999.
2. Sanjay K.Mazumdar, "Composite manufacturing-Material, Product and Process engineering", CRC press, 2002.
3. Daniel Gay, Suong V. Hoa, Stephen W. Tsai, "Composite Materials – Design and Applications", CRC press, 2002.

EEE253 ENERGY CONSERVATION IN TEXTILE INDUSTRY 3 0 0 3

Objectives:

- To gain knowledge on various sources of energy.
- To understand the energy consumption patterns in different textile sectors.
- To get exposure on energy audit and conservation measures.

UNIT-I: ENERGY SOURCES 9 Hours

Sources of Energy: hydro, thermal, wind, solar, biofuels and nuclear. Limitations of Natural resources. Types of energy sources used in textile industry. Unexploited energy sources and problems in their exploitation. Energy consumption, unit of measurement, maximum demand.

UNIT-II: ENERGY CONSUMPTION PATTERNS 9 Hours

Present energy consumption trends, Growth and Demand pattern. Energy use in production processes – Fibre production, Spinning, Textured yarn production, Weaving, Knitting, Dyeing and Finishing, Clothing Manufacture. Energy use in Auxiliary Machinery – Boiler, Humidification plants, compressors. Energy & material balance diagram.

UNIT-III: ENERGY AUDIT 9 Hours

Objectives. Types of Audit. Instrumentation and Methodology of conducting Audit. Analysis of Energy Audit Data. Energy audit in textile industry: spinning, weaving, garmenting and processing. Energy conservation measures.

UNIT-IV: PERFORMANCE INDICATORS 9 Hours

Specific Energy Consumption (UKG), Specific Water Consumption, Specific Fuel Consumption, Specific Steam Consumption. Cross – Country Comparisons of energy usage – Developed & Developing Nations. Benchmarking. Impact on environment. Policy options for promotion of Energy Efficient and Environmentally Sound Technologies.

UNIT-V: ENERGY MANAGEMENT TECHNOLOGIES 9 Hours

Organizational rationalization, Improving the efficiency of usage of Electricity Fuel and Steam. Utilization of heat exchanger. Case Study**:** Benefits of energy efficient technologies / equipments- Economics with payback period.

TOTAL: 45HOURS

TEXT BOOK:

1. "Energy Data Directory and Yearbook", Tata Energy Research Institute Publication, New Delhi, 1997/98.
2. SITRA Focus: Energy Conservation Measures in Spinning Mills, Vol.16/No.6, SITRA, 1999.

REFERENCES:

1. Norms for Spinning Mills, SITRA, 2010.
2. Norms for the Textile Industry, NITRA, 1991.
3. SIMA Annual Report, SIMA, 1996 – 97.

TTX212 PROCESS AND QUALITY CONTROL IN WET PROCESSING 3 0 0 3

Objectives:

- To study the importance of process and quality control in textile wet processing
- To understand the various quality control techniques in Bleaching, Dyeing Printing and finishing
- To create awareness in the latest developments in Fabric and Garment Processing With respective to quality

UNIT- 1 CONCEPT OF PROCESS AND QUALITY CONTROL 9 Hours

Role of Quality and Process Control: Selection and standardization of incoming raw materials – Auxiliaries evaluation of the end products. . Development of auxiliary products for in house consumption. Major areas of process and quality control bleaching, dyeing, printing and finishing.Determination of impurities of natural and man made fibres – cotton; wax content, ash content, colouring matter, Silk – Degumming – Wool percentage of vegetable impurities, oils and greases. Synthetic materials – fibre finishes.

UNIT- II QUALITY ASSURANCE FOR CHEMICALLY PREPARED FABRIC 9 Hours

Evaluation of desizing efficiency residual size content – Evaluation of scouring efficiency – drop absorbency, residual wax, weight loss, degree of impurities. Evaluation of bleaching – degree of whiteness, change in mechanical properties, presence of carboxyl groups and aldehyde groups, fluidity, ash content, uniformity of grey preparation.Evaluation of mercerisation – deconvolution count, lustre, change in mechanical properties, barium activity number, change in dye absorbency.

UNIT - III QUALITY ASSURANCE FOR DYED PRINTED AND FINISHED FABRIC 9 Hours

Quality evaluation of dyed / printed materials, colour fastness to washing, light, crock (dry and wet), perspiration, bleaching, sublimation, uniformity of dyeing, shade matching. Quality evaluation of finished fabric for water repellency, air permeability, stiffness, crease, flame resistance, anti static and soil release. Estimation of residual formaldehyde in resin finished fabric.

UNIT - IV COMPUTER COLOUR MATCHING 9 Hours

Brief introduction to testing instruments for above methods and quality standards, ISO, AATCC Computer Colour Matching: Theory – Concepts and recipe production. Colour difference measurement, prediction of colour recipe ,

UNIT - V QUALITY ASSURANCE FOR ECO FRIENDLY PROCESSING 9 Hours

Water requirements for textile processing. Eco parameters requirements in textiles. Eco-labels-standards for various red listed chemicals. Measurement of Eco parameters-formaldehyde, toxic pesticides, pentachlorophenol, heavy metal traces, azo releasing banned amines halogen carriers, chlorine bleaching. Instruments used for eco parameters measurement- visible spectrometer, UV spectrometer, chromatography- column chromatography, gas chrotomography and high performance liquid chromotography.

TOTAL: 45HOURS

TEXTBOOKS:

1. A. Vaidya, S. S. Trivedi “Textile Auxiliaries and Finishing Chemicals”, Publication, ATIRA, Ahmedabad. 1985.
2. Shenai V A “Evaluation of Textile Chemicals” Sevak Publication, Bombay, 1980.

REFERENCES:

1. Chemical Processing Tablet “Process and Quality Control in Chemical Processing”- TAI, Publication, 1984.
2. C.N. Sivaramakrishnan, Anthology of specialty chemicals for textiles. Colour Publications Pvt Ltd,2009.
3. Trotman, E.R., “Dyeing and Chemical Technology of Textile Fibres”, Charles Griffin and Co. Ltd., London. 1990.

TTX213 TEXTILE PRODUCT ENGINEERING 3 0 0 3

Objectives:

- To impart knowledge about product engineering
- To understand the concept of product design.
- To know about simulation techniques.

UNIT-1 PRODUCT ENGINEERING 9 Hours

Scope and objectives, Product design procedure, Selection of raw material and product, Product analysis, Production aspect, Product design, Consideration of a good product design, Design specifications, Preliminary design, Maintainability, Reliability and Redundancy, Final design, Modular design, Computer aided design, Process selection, Product life cycle, Criteria for product success.

UNIT-II MARKET RESEARCH & CUSTOMER REQUIREMENT ANALYSIS 9 Hours

Product Research – Market Research, Material Research, Equipment and process research, Benchmark analysis, Customer requirement analysis. Product Appraisal – Functional and aesthetic analysis, Manufacturing and economical analysis.

UNIT-III TEXTILE PRODUCT DESIGN 9 Hours

Printed and constructed designs-Product Range- Design for essential and desirable properties of textiles- Fibre, yarn, fabric specification and finishing performance of textile products.

UNIT-IV SIMULATION OF SPECIFIED PROPERTIES 9 Hours

Special yarns, Woven fabrics, Non–woven fabrics, Simulation of material, Texture by using computer graphics, Concept of overall designing procedure.

UNIT-V PRODUCT DEVELOPMENT 9 Hours

Design of non–woven for filtration, Development of needle punched fabrics for geo technical applications, Design of Suture threads, twines & ropes, Geo textiles, Parachute etc.

TOTAL: 45 HOURS

TEXT BOOKS:

1. J. Wilson, “Hand book of Textile Design: Principles, Process and Practice”, Woodhead publishing Limited, 2001.
2. T. Matsuo and M. N. Suresh, “The Design Logic of Textile Products”, Textile Progress Volume: 27, Number: 3, The Textile Institute Publication, 1998.

REFERENCES:

1. George Dieter, “Engineering Design”, McGraw Hill, 4th Edition, 2008.
2. Dale H. Besterfield, “Total Quality Management”, Prentice Hall, 1995.
3. Proceedings of the Seminar on “Non- woven: Technology, Market and Product Potential”, IIT, New Delhi, 2005.

TTX214 TEXTILE MARKETING 3 0 0 3

Objectives:

- To know the concepts of marketing.
- To understand the consumer behaviour.
- To know the pricing techniques of textile products.

UNIT - I INTRODUCTION 9 Hours

Introduction to Marketing - marketing in a developing economy – Marketing of services – planning marketing mix – market segmentation – Marketing research and its applications.

UNIT - II CONSUMER BEHAVIOUR 9 Hours

Understanding Consumers Determinants of Consumer behaviour – models of Consumer Behaviour – Indian Consumer Environment.

UNIT - III PRODUCTION PLANNING AND MANAGEMENT 9 Hours

Introduction to Product Planning – Product Divisions and Strategies – Product Life Cycle and New Product Development –Branding and Packaging Decisions with special reference to textile products.

UNIT - IV RETAILING AND WHOLE SALING 9 Hours

Importance of retailing and wholesaling – types of retailing and wholesaling – recent trends in retailing and wholesaling with reference to textiles – retail and wholesale centres with reference to textiles in India.

UNIT - V PRICING & DISTRIBUTION 9 Hours

Pricing policies and practices – marketing communications – advertising – personal selling and sales promotion – sales forecasting – distribution strategy – cyber marketing – examples with reference to Indian textile market.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Evans. J. R. Marketing: Marketing In The 21st Century, 8th edition, 2003.
2. Philip Kotler, “Marketing Management”, PHI publications, 2004.

REFERENCES:

1. S.Shivaramu, “Export Marketing – A practical Guide to Exporters”, McGraw-Hill Book Company,1985.
2. Ruth E.Glock and Grace L.Kunz, “Apparel manufacturing and sewn product analysis”, Prentice Hall, New Jersey, 2000.

TTX215 ENVIRONMENTAL MANAGEMENT IN TEXTILE INDUSTRY 3 0 0 3

Objectives:

- To understand the impact of pollution.
- To attain the knowledge on various pollutants in textile industry.
- To get exposure on pollution in various textile process.
- To gain knowledge on the pollution control measures.

UNIT-I INTRODUCTION TO POLLUTION AND ITS SOURCES 9 Hours

Pollution and its impact on ecology, environment and society - Sources of pollution -Air, water, noise pollution in textile industry-Overview of pollutants and waste streams-hazardous waste-Waste categorization for the textile industry-Problems associated with waste-Importance of pollution control in textile industry.

UNIT-II POLLUTION IN SPINNING AND WEAVING 9 Hours

Air pollution in yarn and fabric manufacturing process-standards –causes-effects- health hazards associated with air pollution-pollution prevention measures-Noise pollution in various textile departments- standards - causes and effects- preventive measures-health hazards associated with noise pollution-Method of noise control in textile mills. Water pollution in slashing and sizing-water pollutants –causes and effects – remedial measures.

UNIT-III POLLUTION IN TEXTILE CHEMICAL PROCESSING 9 Hours

Pollutant associated with dyeing- Toxicity of dyes, intermediates, auxiliaries, finishing chemicals –causes and effects – health hazards associated with hazardous dyes and chemicals -Pollution prevention measures in dyeing–Emerging pollution prevention technologies-pollution in printing, finishing, garment manufacturing process – Pollution control and preventive measures.

UNIT-IV EFFLUENT TREATMENT 9 Hours

Textile effluent and their characterization, measurement of effluent strength- BOD-COD-AOX-TDS- methods of effluent treatment: primary, secondary and tertiary treatments- disposal and recycling of effluents-Environment legislation in India and other countries with respect to dyes and other chemicals- Banned dyes and chemicals.

UNIT-V ENVIRONMENTAL MANAGEMENT 9 Hours

Organisation involved in pollution control-national & international-Waste Audit-Pollution prevention programme-Pollution control board, pollution norms -ISO 14000-Ecolabels-Organic Clothing-Ecofriendly garment processing-Environmental management, Study of polluted rivers and audit system-Pollution prevention case studies.

TOTAL: 45 HOURS

TEXT BOOKS:

1. H.R. (Harold R.), Park Ridge. N.J, "Pollution Control in the Textile Industry", Jones Noyes Data Corp., 1973.
2. Best Management Practices for Pollution Prevention in the Textile Industry –Manual by US Environmental Prevention Agency, 1996.

REFERENCES:

1. K.Slater, “Environmental Impact of Textiles” , Wood head publication,2003.
2. Pollution Prevention in Textile Industry manual by U.S EPA/SEMARNAP Pollution prevention work group, 1996.
3. S.C.Bhatia “Handbook of Industrial Pollution and Control (Vol. 1 & 2), CBS edition, 2002.
4. Peter I Norman and Roy Seddon , Low Moor, “ Pollution Control in the Textile industry – the chemical auxiliary manufacturer’s role”, Allied Colloids plc, Bradford , UK, Journal of Society of Dyers and Colourists, Volume 107 May/June 1991.
5. R.Senthil Kumar, “Cotton Dust-Impact on human health and environment in the textile industry”, Textile Magazine, January 2008.
6. R.Senthil Kumar, “Noise pollution-A nuisance to Textile industry” , Asian Textile Journal, May 2008.

TTX 216 MEDICAL TEXTILES 3 0 0 3

Objectives:

- To gain knowledge about various textile fibres and fabric structures used in medical textiles.
- To get exposure about various bio materials and implantable textiles.
- To understand the concept of wound care management.

UNIT- I INTRODUCTION TO MEDICAL TEXTILES 9 Hours

Medical textiles: classification – Textile structures in medical textiles - Absorbent hygiene products. Healthcare and hygiene products: an overview –world consumption- Market prospects – Super absorbant fibres - Antimicrobial fibres - Disposable products - Operating room garments-Application of nonwovens in healthcare and hygiene sector.

UNIT- II BIOMATERIALS 9 Hours

Biomaterials in medical textiles: an overview- Textile fibres and their classification – Classes of textile material used as biomaterials in medicine – property requirement to act as biomaterials-Biocompatibility-Biomaterials in cardiovascular applications - dental implants - Ophthalmologic applications-orthopedic applications-Drug delivery system-sutures.

UNIT-III IMPLANTABLE DEVICES AND ARTIFICIAL ORGANS 9 Hours

Implantable devices: an overview – Vascular Prosthesis- Advantages of gelatine impregnated graft-Ligament prostheses - Mesh grafts - Resorbable polymers - Resorbable spunlaid nonwovens -Introduction – Implantable pneumatic artificial hearts-Extracorporeal artificial organs. Non-implantable materials.

UNIT -IV WOUND CARE MATERIALS 9 Hours

Wound care materials: an overview, Wound – types, healing process; requirement of wound dressing-Support surfaces - Initial management - Bandages - Splinting - Skin substitutes- Skin grafts and donor sites - Dressings - Pressure garments - Silicone gels- Wound care dressings from chitin. Materials - study of various kinds of wound care dressing and advanced wound dressings.

UNIT-V SMART TEXTILES IN MEDICINE 9 Hours

Applications of phase change material in medical field-rehabilitation-monitoring pregnancy-for monitoring children – mobile health monitoring – speciality fibres and finishes for special applications.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Anand S., " Medical Textiles", Textile Institute, 1996.
2. Anand S.C., Kennedy J.F. Miraftab M. and Rajendran S., "Medical Textiles and Biomaterials for Health care", Wood head Publishing Ltd. 2006.

REFERENCES:

1. Joon B. Park. and Joseph D. Bronzino., "Biomaterials – Principles and Applications",CRC Press Boca Raton London, NewYork, Washington , D.C. 2002.
2. Horrocks A.R. and Anand S.C, "Technical Textiles", Textile Institute,1999.
3. Michael Szycher and Steven James Lee, "Modern Wound Dressing: A Systematic Approach to Wound Healing", Journal of Biomaterials Applications, 1992.

TTX217 CREATIVITY, INNOVATION AND NEW PRODUCT DEVELOPMENT 3 0 0 3

Objectives:

- To gain knowledge about new product development.
- To get the idea about project selection and product planning.
- To understand the model preparation and evaluation.

UNIT- I INTRODUCTION 9 Hours

The process of technological innovation - factors contributing to successful technological innovation - the need for creativity and innovation - creativity and problem solving – brain storming - different techniques.

UNIT- II PROJECT SELECTION AND EVALUATION 9 Hours

Collection of ideas and purpose of project - Selection criteria - screening ideas for new products (evaluation techniques).

UNIT- III NEW PRODUCT DEVELOPMENT 9 Hours

Research and new product development - Patents - Patent search - Patent laws - International code for patents - Intellectual property rights (IPR).

UNIT- IV NEW PRODUCT PLANNING 9 Hours

Design of proto type - testing - quality standards - marketing research - introducing new Products.

UNIT- V MODEL PREPARATION & EVALUATION 9 Hours

Creative design - Model Preparation - Testing - Cost evaluation - Patent application

TOTAL: 45 HOURS

TEXTBOOKS:

1. Brain Twiss, “Managing Technological Innovation”, Pitman Publishing Ltd., 1992.
2. Harry B.Watton, “New Product Planning”, Prentice Hall Inc., 1992.

REFERENCES:

1. Harry Nystrom, “Creativity and Innovation”, John Wiley & Sons, 1979.
2. N.Khandwalla – “Fourth Eye (Excellence through Creativity) - Wheeler Publishing”, Allahabad, 1992.
3. I.P.R. Bulletins, TIFAC, New Delhi, 1997.

TTX 218 NANO TECHNOLOGY IN TEXTILES 3 0 0 3

Objectives:

- To understand the basic concept of nanotechnology.
- To know the applications of nanotechnology in textiles.
- To gain knowledge on the characterization of nano textiles

UNIT- I INTRODUCTION 9 Hours

Nano Technology: Basic concepts, definition. Different types of process: Top down approach, bottom up approach. Synthesis of nano particles: Theory and Mechanism of Nano Technology, Quantum physics particle size, nano particles, synthesis, characterization of nano particles.

UNIT- II NANO FIBRES 9 Hours

Principle of Electro spinning of nano fibres: capillary method, charge injection method. Nano fibres: properties and application. Producing noncontinuous or short yarns: Rotating collector method, Gap alignment method. Producing continuous yarns: Multi collector yarn, Core-spun yarn, staple fibre yarn , self-assembled yarn, spin-bath collector yarn and grooved belt collector yarn.

UNIT-III APPLICATIONS OF NANOTECHNOLOGY 9 Hours

Textile Applications of Nano Technology, Application in fibres, yarns, fabrics, dyeing and finishing. Nano finishing through nano architecture, nanopel, Nano care, nano touch, nano feel.

UNIT-IV CHARACTERIZATION OF NANO TEXTILES 9 Hours

Characterization Methods: Optical Microscopy, SEM, Transmission Electron Microscopy, Atomic Force Microscopy, Energy dispersion X-ray and Raman Spectroscopy. Testing of Nano Functional Textiles: Anti-microbial testing, UV protection testing and self cleaning testing.

UNIT- V NANOCOMPOSITES AND NANO COATING 9 Hours

Synthesis of carbon nanotubes: principle methods, arc discharge, laser ablation, chemical vapour deposition (CVD). Polymeric Nano Composites: characterization, applications. Nanotechnologies for coating and structuring of textiles: Anti-adhesive nano coating of fibres and textiles, water and oil repellent coatings by plasma treatment, self cleaning super hydrophobic surfaces.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Ashutosh Sharma, Jayesh Bellare and Archana Sharma, "Advances in Nanosciences and Nanotechnology", NISCAIR, First Edition, 2004.
2. Brown P and Stevens K., "Nano fibres and Nanotechnology in Textiles", Woodhead Publishing Limited, 2007

REFERENCES:

1. Jurgen Schulte., "Nanotechnology: Global strategies, industry trends and applications", Wiley Publications, 2005.
2. Bhushan Bharat., "Springer Handbook of Nanotechnology", Springer, 2007

TTX 219 SMART TEXTILES 3 0 0 3

Objectives:

- To under stand the smart technology for textiles
- To gain knowledge about intelligent textiles and its applications
- To know about the manufacturing techniques of wearable electronic clothing.

UNIT- I BASIC CONCEPTS OF SMART TEXTILES 9 Hours

Smart technology for textiles and clothing**,** Development of smart technology for textiles and clothing. Electrically active polymer materials-Polymer materials as actuators or artificial muscle, Peculiarity of polymer gel actuator, Triggers for actuating polymer gels, Electro-active polymer gels as artificial muscles.

UNIT- II HEAT STORAGE AND THERMO-REGULATED TEXTILES 9 Hours

Basics of heat-storage materials, Manufacture of heat-storage and thermo-regulated textiles and clothing, Properties and clothing application, Development trends.

UNIT- III THERMALLY SENSITIVE MATERIALS 9 Hours

Introduction, Thermal storage and thermal insulating fibres, Thermal insulation through polymeric coatings, Design of fabric assemblies. Phase change materials – Introduction, Applications in textiles and clothing. Uses of Nano-Technology textiles and clothing.

UNIT- IV INTELLIGENT TEXTILES 9 Hours

Tailor-made intelligent polymers for biomedical applications –Introduction, Fundamental aspects of shape memory materials , Concept of biodegradable SMP , Degradable thermoplastic elastomers having SM properties , Degradable polymer networks having SM properties.

UNIT- V WEARABLE TECHNOLOGY 9 Hours

Wearable technology for snow clothing -Introduction, Key issues and performance requirements and prototype; Bio-processing for smart textiles and clothing -Introduction, Treatment of wool with enzymes, Treatment of cotton with enzymes, Enzymatic modification of synthetic fibres , Spider silk , Intelligent fibers.

TOTAL: 45 HOURS

TEXT BOOKS:

1. H.Mattila, “Intelligent Textiles and Clothing” Woodhead Publishing Ltd., England, 2006.
2. X.M.Tao, “Smart Fibres, Fabrics and Clothing: Fundamentals and Applications”, Woodhead Publishing Ltd., England, 2001

REFERENCES:

1. Jinlian Hu, “Shape Memory Polymers and Textiles”, 1st edition, CRC, USA, 2007.
2. William D. Armstrong, “Smart Structures and Materials: Active Materials Behaviour and Mechanics”, Society of Photooptics, USA, 2005.
3. Hipler, “Biofunctional Textiles and the Skin”, 1st edition, S.Karger Ag, Switzerland, 2006.

GSS 101 - PROFESSIONAL ETHICS 3 0 0 3

Objectives:

- To create an awareness on Engineering Ethics
- To instill Moral and Social Values and Loyalty
- To understand the professional rights of oneself

UNIT- I ENGINEERING ETHICS AND THEORIES 9 Hours

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

UNIT- II SOCIAL ETHICS AND ENGINEERING AS SOCIAL EXPERIMENTATION 9 Hours

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

UNIT- III SAFETY 9 Hours

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

UNIT- IV RESPONSIBILITIES AND RIGHTS OF ENGINEERS 9 Hours

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

UNIT- V GLOBAL ISSUES AND ENGINEERS AS MANAGERS, CONSULTANTS AND LEADERS 9 Hours

Multinational Corporations – Environmental ethics – computer ethics – weapons development – engineers as managers – consulting engineers – engineers as expert witnesses and advisors – moral leadership – Engineers as trend setters for global values, IT Industry (cultural aggression).

TOTAL: 45 HOURS

TEXT BOOKS:

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw-Hill, New York, 2005.
2. John R. Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
3. Bhaskar S. "Professional Ethics and Human Values", Anuradha Agencies, Chennai, 2005.

REFERENCES:

1. Charles D. Fleddermann, “Engineering Ethics”, (Indian Reprint) Pearson Education / Prentice Hall, New Jersey, 2004.
2. Charles E. Harris, Michael S. Protchard and Michael J Rabins, “Engineering Ethics – Concepts and cases”, (Indian Reprint now available) Wadsworth Thompson Leatning, United States, 2000.

GSS105- ENTREPRENEURSHIP DEVELOPMENT 3 0 0 3

Objectives:

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

UNIT – I 9 Hours

Entrepreneur –Entrepreneurship and economic development – its importance – Entrepreneur Qualities, nature, types, traits of entrepreneur. Similarities and differences between entrepreneur and manager – factors affecting entrepreneurship growth-Problems of entrepreneurs.

UNIT – II 9 Hours

Entrepreneurial promotion: Motivation: Theories and factors – Entrepreneurial development programmes – need, objectives, phases and evaluation - Training and developing - occupational mobility - factors in mobility - Role of consultancy organizations is promoting entrepreneurs.

UNIT – III 9 Hours

Project Management: Project identification and selection – project formulation – Report preparation – evaluation: marketing - technical and financial.

UNIT – IV 9 Hours

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

UNIT – V 9 Hours

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

TOTAL: 45 HOURS

TEXT BOOKS:

1. S S Khanka, S. Chand & Co "Entrepreneurial Development" ISBN: 81-219-1801-4, 2008.
2. Dr. R. Radhakrishnan and Dr. S. balasubramanian, "Intellectual Property Rights Text and Case", Excel Books , ISBN: 978-81-7446-609-9, 2008.

REFERENCES:

1. Vasanth Desai "Dynamics of Entrepreneurial Development and Management" Himalaya Publishing House.
2. N.P.Srinivasan & G.P. Gupta "Entrepreneurial Development" Sultanchand & Sons.
3. P.Saravanavelu "Entrepreneurship Development" Eskapee publications.
4. S.S.Khanka "Entrepreneurial Development" S.Chand & Company Ltd.,
5. Satish Taneja, Entrepreneur Development ; New Venture Creation www.iprventure.com.

GSS106 GOVERNANCE OF INDIA 3 0 0 3

UNIT – I CONSTITUTION 9 Hours

Constitution of India – Objectives enshrined in Preamble, fundamental rights & duties, directive principles of state policy – Union executive, legislative and judiciary – state governments – Federal features and unitary bias-Different types of governments in the world.

UNIT – II LEGISLATURE AND JUDICIARY 8 Hours

Parliament – Lok Sabha and Rajya Sabha – Legislative procedure – Union judiciary – State legislature – State judiciary – Parliamentary democracy.

UNIT – III CENTRAL POLITICAL EXECUTIVE 9 Hours

Roles of President, Vice President, Prime Minister, Council of Ministers, Cabinet Committees – Role of Central Secretariat – Boards and Commissions – Ministries and Departments.

UNIT – IV STATE ADMINISTRATION 9 Hours

Roles of Governor, Chief Minister, Council of Ministers, State secretariat – Administration of law and order – District administration – Panchayat Raj – Municipal administration – Autonomy of local bodies.

UNIT – V E – GOVERNANCE 10 Hours

Overview – E-governance evolution – Global trends – Models of digital governance – E-Readiness – Infrastructural needs – Evolutionary stages in E-governance – NICNET – CARD project – Computerization of urban local bodies – E-governance in secretariat – Land records management software – IT in Indian judiciary – Rural e-seva.

TOTAL: 45 HOURS

TEXT BOOKS:

1. Vishnoo Bhagwan and Vidya Bhushan, "Indian Administration", S-Chand & Co., 2005.
2. C.S.R. Prabhu, "E-Governance - Concepts and Case Studies", Prentice-Hall of India 2005. (for Unit-V only).
3.

REFERENCES:

1. M. Laxmikanth, 'Public Administration', 5th edition, 2009.
2. www.india.gov.in, National portal of India.
3. Kiran Bedi and others, "Government @ net", Sage Publications, New Delhi 2001.
4. www.nisg.org, 'Architecting e-government' website of National Institute of Smart Government.

GSS107 - INDIAN ECONOMY **3 0 0 3**

Objectives:

- To understand the fundamentals of Macro Economics and National Income of India.
- To study the importance of planning and economic growth in India.
- To understand the importance of infrastructural development in the economy.
- To know the causes of unemployment and different employment schemes for educated and uneducated.
- To study the basis of Indian Banking system and its importance.

Unit – I: Fundamentals of Macro-economics **9 Hours**

Economics – economic activity -factors of production – factor income and circular flow of income. Concept of national income- definition of GNP, GDP – National Income of India - Growth and structure.

Unit – II: Planning and Economic Growth **9 Hours**

Indian planning – Planning commission – Five year plans – objectives and achievements – Industry policies – public sector understandings – private sector – SSIs Recent trends in SSIs, SME and SEZ – Economic reforms and globalization – IT and IT enable service in India.

Unit – III : Infrastructure of Indian Economy **9 Hours**

Infrastructure and Economic development – power and energy – Transport: road, rail –and civil aviation. Urban infrastructure – international transport system – sea and air.

Unit – IV : Labour and Unemployment **9 Hours**

Population –size and growth – demographic transition – age composition – education and its issues. Employment – nature of unemployment its causes – Employment schemes for educated and uneducated.

Unit - V: Indian Banking System and Credit **9 Hours**

Reserve Bank of India: its basic functions – commercial banks – its functions: deposit acceptance and lending – types of deposit – types of loans and advances –other banking services.

TOTAL – 45 HOURS

TEXT BOOKS:

1. Ruddar Datt and KPM Sundaram, S. Chand and Co "Indian Economy" – ISBN: 81-219-2045-0, 2004.
2. Macro Economics by H.L. Ahuja, S. Chand and Co – 2008, ISBN: 81-219-0433-1, 2008.

REFERENCEs:

1. Mishra, S. K. and V. K. Puri "Indian Economy"; Himalaya Publishing House, 21st revised edition, 2003.
2. Samuelson and Nordhaus "Economics", Tata – Mecrew Hill, 2007.