

DKTE Society's
TEXTILE & ENGINEERING INSTITUTE

Rajwada, Ichalkaranji 416115
(An Autonomous Institute)

DEPARTMENT: TEXTILES

CURRICULUM
B. Tech. Textile Chemistry Program

First Year

With Effect From

2023-2024



Promoting Excellence in Teaching
Learning & Research

**First Year B. Tech – Textile Chemistry
Semester-I**

| Sr. No. | Course Code | Course Title | Course Category | Teaching scheme | | | | Course Credits |
|---------|-------------|--|-----------------|-----------------|----------|----------|-----------------|----------------|
| | | | | L | T | P | Contact Hrs./wk | |
| 1 | 01TCL151 | Mathematics and Statistics - I | BSC | 3 | | | 3 | 3 |
| 2 | 01TCL152 | Applied Physics | BSC | 3 | | | 3 | 3 |
| 3 | 01TCL153 | Design Thinking and Drafting | ESC | 2 | | | 2 | 2 |
| 4 | 01TCL154 | Physical Chemistry | BSC | 3 | | | 3 | 3 |
| 5 | 01TCL155 | Inorganic and Industrial Chemistry | ESC | 3 | | | 3 | 3 |
| 6 | 01TCP156 | Design Thinking and Drafting Lab | AEC01 | | | 2 | 2 | 1 |
| 7 | 01TCP157 | Idea Lab | VSEC | | | 2 | 2 | 1 |
| 8 | 01TCP158 | Professional Communication Lab | AEC02 | | 2 | | 2 | 2 |
| 9 | 01TCP159 | Inorganic and Industrial Chemistry Lab | VSEC | | | 2 | 2 | 1 |
| 10 | 01TCP160 | Physical Chemistry Lab | VSEC | | | 2 | 2 | 1 |
| | | Total | | 14 | 2 | 8 | 24 | 20 |

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester –I)
01TCL151: Mathematics and Statistics- I

| | | |
|--|------------------|---|
| Teaching Scheme: Lectures: 3 Hrs/Week | Credits 3 | Evaluation Scheme: SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks |
|--|------------------|---|

Course Objectives:

1. Introduce students with Normal form, Echelon form and Rank of matrix & use them to solve the system of equations. Also introduce students with the theory of finding derivative numerically & use it to solve problems of numerical differentiation.
2. Introduce students with the theory of finding partial derivatives & apply it for finding errors, approximations maxima and minima.
3. Introduce students with basic concept of statistical data, collection and types of data, classification, graphical representation, frequency distribution with construction, measures of central tendency and dispersion. Prepare them to solve problem of these concepts with interpretation.
4. Introduce students with concept of skewness and kurtosis, measures of skewness and kurtosis. Prepare them to solve and interpret problems of skewness.

Course Outcomes:

At the end of the course, students will be able to

1. The theory of normal form, echelon form and rank of matrix & apply it to solve system of equations, the theory of finding derivative numerically and also able to solve problems of numerical differentiation.
2. The theory of finding derivative partially and able to solve the problems of application of partial differentiation.
3. Concept of statistical data collection, types of data, classification, graphical representation, frequency distribution and its construction, central tendency and dispersion of data, measures of central tendency and dispersion. Also, they are able to analyze and interpret given statistical data using these concepts.
4. Concept of skewness and kurtosis, measures of skewness and kurtosis. Also, they are able to solve and interpret problems of skewness.

Course Contents

| Unit I | Matrix | 05 Hours |
|--|----------------------------------|-----------------|
| Rank of matrix (Normal form of matrix, Echelon form of Matrix), Solution of simultaneous linear equations (Homogeneous & Non- Homogeneous) | | |
| Unit II | Numerical Differentiation | 05 Hours |
| Newton's forward & backward difference formulae, Sterling's central difference formula. Newton's divided difference formula. | | |

| Unit III | Partial Differentiation | 10 Hours |
|--|---|-----------------|
| Introduction of Partial Differentiation, Differentiation of implicit functions, Euler's theorem on homogeneous function. Jacobean ($J.J'=1$) only, Application of PD for Errors- approximations and maxima-minima. | | |
| Unit IV | Introduction of Statistics | 08 Hours |
| Definitions of Population, Variable, Attribute, Census Survey, Sample Survey, Random sample. Raw statistical data, collection, classification, Frequency distribution, class limits & boundary, class width, mid-point. Histogram, Frequency polygon, Frequency curve. Measures of central tendency: Arithmetic Mean (A.M.), Median, Mode, Combined Mean & Partition values: Quartiles Deciles and Percentiles with computation. | | |
| Unit V | Measures of dispersion | 07 Hours |
| Range, Quartile deviation, Mean deviation, Standard deviation as Absolute measures of dispersion, Coefficient of range, quartile deviation, mean deviation, coefficient of variation as Relative measures of dispersion, consistency of data & computation. | | |
| Unit VI | Measures of Skewness& kurtosis | 05 Hours |
| Skewness, types, Karl Pearson's & Bowley's coefficient of skewness & Computation. Kurtosis definition and types only. (No Examples of Kurtosis) | | |
| Reference Books: | | |
| <ol style="list-style-type: none"> 1. A textbook of applied mathematics Vol.-I & II by P.N. & J.N. Wartikar 2. Higher engineering mathematics by B.S. Grewal 3. A textbook of applied mathematics by Bali, Saxena, Iyengar. 4. Mathematical Statistics by J.E. Freund. 5. Probability & Statistics for engineers by Johnson. 6. Statistical methods by Kumbhojkar. | | |

| DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. (Textile Chemistry) (Semester -I) 01TCL152: Applied Physics | | |
|---|-------------------------------------|--|
| Teaching Scheme: Lectures: 3 Hrs/Week | Credits 3 | Evaluation Scheme: SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks |
| Course Objectives: <ol style="list-style-type: none"> To Understand properties of matter such as surface tension, viscosity, elasticity and their applications. To Understand the concepts of diffraction, polarization and their applications. To Understand working principle of laser and photocell. To Understand basic concepts related to crystallography. | | |
| Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> Understand properties of matter such as surface tension, viscosity, elasticity etc. and their applications. Comprehend the concepts of diffraction, polarization and their applications. Apply the working principles of photocell, LASER and their applications in engineering. Analyze crystal structure by x-ray diffraction. | | |
| Course Contents | | |
| Unit I | Elasticity | 7 Hours |
| Stress, strain, Hooke's Law of elasticity, breaking stress, Working stress, Factor of safety. Some peculiar traits and Factors affecting elasticity. Poisson's ratio, Young's modulus, bulk Modulus and Modulus of rigidity. Relation between Y , η and K , Twisting couple on a cylinder (for wire), Torsional rigidity. | | |
| Unit II | Viscosity | 6 Hours |
| Newton's Law of viscosity, Streamline & Turbulent flow, Critical velocity, Significance of Reynold's number, Stokes law, Terminal velocity and its expression. Poiseuille's equation for flow of a liquid through a horizontal capillary tube. Experimental determination of η for a liquid by Poiseuille's method, Working of Ostwald's viscometer. Applications of viscosity. | | |
| Unit III | Friction and Surface Tension | 6 Hours |
| Friction, Types of friction, Laws of friction, Coefficient of friction, Factors affecting frictional intensity, importance of friction in textile. Molecular theory of surface tension. Surface energy, Angle of contact, capillary action, Expression for rise of liquid in capillary-by-capillary rise method. Applications of surface tension. Excess pressure inside a liquid drop and soap bubble. | | |
| Unit IV | Wave Optics | 7 Hours |
| Laws of refraction, refractive index, total internal reflection. Magnifying Power and Resolving power. Construction & working of electron microscope. | | |

| | | |
|---|------------------------|----------------|
| Polarization of light, Double refraction, Nicol prism, Quarter wave and Half wave plate. Production and analysis of circularly and elliptically polarized light. | | |
| Unit V | Photonics | 7 Hours |
| Stimulated Absorption, Spontaneous emission, Stimulated emission. Characteristics of laser, Gas Laser (CO ₂ laser), Applications of Laser in textile industry. Photoelectric effect, Einstein's photoelectric equation. Factors affecting the photoelectric effect. Photoelectric sensors, Use of photoelectric sensors in textile industry. | | |
| Unit VI | Crystallography | 6 Hours |
| Production of x-rays by modern Coolidge tube, Properties and Applications of X-rays, X-ray spectrum. Introduction to crystallography, Miller indices of crystallographic planes, interplanar spacing, x-ray diffraction, Bragg's law, determination of crystal structure by Bragg's x-ray spectrometer. | | |
| Reference Books: | | |
| <ol style="list-style-type: none"> 1. Elements of Properties of Matter by D.S. Mathur 2. Engineering Physics by B.L. Theraja 3. Engineering Physics by R.K. Gour & Gupta 4. Physics for Engineers by M.R. Srinivasan 5. Text Book of Optics by Brijlal & Subramanyam 6. Optics by A.K. Ghatak | | |

| DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. (Textile Chemistry) (Semester – I) 01TCL153: Design Thinking and Drafting | | |
|--|--|---|
| Teaching Scheme: Lectures: 02 Hrs/Week | Credits 02 | Evaluation Scheme: SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks |
| Course Objectives: <ol style="list-style-type: none"> To introduce procedure for converting an idea into design. To convert 2-dimensional views in to 3-dimensional view. To convert 3-dimensional view from given 2-dimensional views. To understand procedure for drawing development of solids such as cone, cylinder, prism and pyramid. | | |
| Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> Generate ideas through design thinking. Draw 2-dimensional views from the given pictorial 3-dimensional view. Draw 3-dimensional view from given 2-dimensional views. Draw Development of lateral surfaces of solids such as cone, cylinder, prism & pyramid. | | |
| Course Contents | | |
| Unit I | Introduction to Design Thinking | 02 Hours |
| Principles of design thinking, stages of design thinking, benefits of design thinking, team-based design thinking, tools of design thinking. | | |
| Unit II | Applications of Design Thinking | 02 Hours |
| Design thinking for Business Process Modeling, Prototyping, Strategic Innovation, Importance of Design Thinking Workshop. | | |
| Unit III | Introduction to Drafting | 05 Hours |
| Lines, Letterings, and dimensioning. Introduction to Projection of Points, Lines, Planes, Solids and Section of Solids inclined to both planes H.P. and V.P. | | |
| Unit IV | Orthographic Projections and Sectional Orthographic views | 06 Hours |
| General principles, First angle method, Third angle method, Cutting plane, Types of sections, drawing orthographic views (Elevation, Plan and End view) and sectional views of machine components. | | |
| Unit V | Isometric Projections | 04 Hours |
| Principle, Isometric scale, Isometric views, Making Isometric drawings of simple objects from orthographic views. | | |

| Unit VI | Development of Surfaces | 07 Hours |
|--|--------------------------------|-----------------|
| Introduction to solids (Types of solids only), Development of lateral surfaces of cubes, prisms, pyramids, cylinders & cones. | | |
| Reference Books: | | |
| <ol style="list-style-type: none">1. Product Design and Development- Karl Ulrich, Steven Eppinger, Anita Goyal.2. Engineering Design – George Dieter.3. Engineering Drawing by N. D. Bhatt & V. M. Panchal.4. Engineering Drawing by Venugopal.5. Machine Drawing by N. D. Bhatt & V. M. Panchal.6. Machine Drawing by K. L. Narayana, Kannaiah P., K. Venkata Reddy. | | |

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester – I)
01TCL154: Physical Chemistry

| | | |
|---|-------------------|---|
| Teaching Scheme: Lectures: 03 Hrs/Week | Credits 03 | Evaluation Scheme: SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks |
|---|-------------------|---|

Course Objectives:

1. To explain different types solutions and apply the phase rule.
2. To apply the laws of thermodynamics, thermochemistry and chemical kinetics.
3. To select appropriate advanced material and catalyst during various process in industry.
4. To apply the knowledge of photochemistry and various spectroscopic methods of analysis.

Course Outcomes:

At the end of the course, students will be able to

1. Explain different types solutions and apply the phase rule.
2. Apply the laws of thermodynamics, thermochemistry and chemical kinetics.
3. Select appropriate advanced materials and catalyst during various process in industry.
4. Apply the knowledge of photochemistry and various spectroscopic methods of analysis.

Course Contents

| Unit I | Solution and Phase Rule | 07 Hours |
|---|---|-----------------|
| Introduction, pH, buffers, indicators, choice of indicators for acid-base titrations, Normality, Molarity, true solution and colloidal solution, Surface tension, Surfactant, cleansing action of surfactant, concept of microemulsions, use of microemulsions, viscosity, applications in textiles Gibb's phase rule, phase diagram, one component, two components and three component system. | | |
| Unit II | Thermodynamics and Thermochemistry | 07 Hours |
| Introduction, Zeroth, First, Second and Third law of thermodynamics, internal energy, work and maximum work in isothermal expansion of a gas, Heat capacities at constant pressure and constant volume, Entropy, Heat changes in chemical reaction, Heat of reaction at constant pressure and constant volume, Heat of formation, Heat of combustion, Heat of neutralization, Heat of dilution, Kirchoff's equation, Numerical problems. | | |
| Unit III | Advanced Material | 06 Hours |
| <p>Nanomaterials: Introduction, classification of nanomaterials, Synthesis of nano-materials (Solution combustion and Sol-gel methods).</p> <p>Carbon nanotubes: Introduction, types, synthesis by modified CVD method, applications.</p> <p>Graphene and Graphene Oxides-Synthesis (Modified Hummer's method), fictionalization and applications.</p> <p>Borazene: Structure and its applications.</p> <p>Piezoelectric materials: Introduction and their applications.</p> | | |

| Unit IV | Chemical Kinetics | 06 Hours |
|--|---------------------------------|----------|
| Introduction, rate of chemical reactions, rate equations, order of reaction, zero, first, second and third order reactions with their examples, pseudo first order reactions, rate constant and its units, integrated rate equation, half-life of reaction: (zero order and first order reactions), numerical problems, factors affecting rate of chemical reactions. | | |
| Unit V | Photochemistry and Spectroscopy | 08 Hours |
| <p>Photochemistry: Introduction, comparison between thermal and photochemical reactions, Jablonski diagram, fluorescence, phosphorescence.</p> <p>U.V. Spectroscopy: Introduction, Beer-lambert Law, Chromophores, Auxochrome, Red shift, Blue shift, Hypochromic shift, Hyperchromic shift, Effect of conjugation on position of UV and visible band.</p> <p>IR Spectroscopy: Introduction, fundamental modes of vibrations, Hook's law, fundamental group region of IR spectrum, functional group region, factors affecting IR band values.</p> <p>Mass spectroscopy: Introduction, mass spectrometer, isotopic abundance.</p> | | |
| Unit VI | Adsorption and Catalysis | 05 Hours |
| <p>Adsorption: Introduction, comparison of absorption and adsorption, types of adsorption, Freundlich adsorption isotherm, Langmuir adsorption isotherm, BET equation,</p> <p>Catalyst: types of catalyst, catalyst poisoning, theories of catalysis, criteria for choosing catalyst for industrial processes, applications of catalysts for industrially important processes.</p> | | |
| Reference Books: | | |
| <ol style="list-style-type: none"> 1. A Text book of Physical Chemistry by Samuel Glasstone. 2. Principles of Physical Chemistry by Maron & Prutton. 3. Essentials of Physical Chemistry by Bahl and Tuli. 4. A Text book of Physical Chemistry by L.K. Sharma. 5. Principles of Physical Chemistry by B. R. Puri, Madan S. Pathania. 6. Physical Chemistry by G.M. Barrow. 7. Textbook of Quantitative Chemical Analysis by G. H. Jeffery, J. Bassett, J. Mendham, R. C Denny. 8. Instrumental Methods of Chemical Analysis by G. Chatwal and S. Anand. 9. Chemistry for Engineers by H.K. Chopra Anupama Parmar under Narosa publications. 10. Materials and Metallurgy by Dr. V. D. Kodgir. 11. Organic chemistry of high polymers by Lenz. 12. 9.A Text book of Material Science by V.K. Manchanda. 13. 10.The Nanoscope by Dr. ParagDiwan& Ashish Bharadwaj. | | |

14. 11. Advanced Materials and Nanotechnology for Sustainable Energy and Environmental Applications, ISBN 978-3-0365-5229-3 (hardback); ISBN 978-3-0365-5230-9 (PDF). doi.org/10.3390/books978-3-0365-5230-9.
15. Material science and metallurgy by C. Daniel Yesudian and D.G. Harris Samuel.
- 16.

Supplementary Readings:

Advanced Materials and Nanotechnology for Sustainable Energy and Environmental Applications. ISBN 978-3-0365-5229-3 (hardback); ISBN 978-3-0365-5230-9 (PDF) doi.org/10.3390/books978-3-0365-5230-9

**DKTES Textile and Engineering Institute, Ichalkaranji,
First Year B. Tech. (Textile Chemistry) (Semester – I)
01TCL155: Inorganic and Industrial Chemistry**

| | | |
|---|---------------|---|
| Teaching Scheme: Lectures: 03 Hrs/Week | Credits 03 | Evaluation Scheme: SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks |
|---|---------------|---|

Course Objectives:

At the end of the course, students will be able to

1. To identify engineering problems to achieve practical solutions through knowledge of purification and testing Methods
2. To achieve practical solutions through knowledge of bonding and inorganic compounds in textile processing.
3. To select appropriate advanced structural material and polymers in industries and society.
4. To analyze and troubleshoot the problems related to energy technology.

Course Outcomes:

At the end of the course, students will be able to

1. Identify engineering problems to achieve practical solutions through knowledge of purification and testing Methods
2. Achieve practical solutions through knowledge of bonding and inorganic compounds in textile processing.
3. Select appropriate advanced structural material and polymers in industries and society.
4. Analyze and troubleshoot the problems related to energy technology.

Course Contents

| Unit I | Purification and Testing Methods | 07 Hours |
|--|--|-----------------|
| Introduction, water quality parameters: Chloride content, TS, TDS, Dissolved oxygen, Hardness of water: definition, types, units and numerical problems, Scale and Sludge formation, Caustic Embrittlement, Zeolite process, Ion exchange process, Reverse osmosis. Sublimation, Distillation, Solvent extraction, Determination of melting point and boiling point. Chromatography- Introduction, classification of chromatography, HPLC, GC, applications in textiles. | | |
| Unit II | Theory of Bonding and Stoichiometry | 06 Hours |
| Introduction, chemical bond, types of bond: covalent bond, ionic bond, co-ordinate bond, primary and secondary bonds such as Van der Waals forces, hydrogen bonds, characteristics of ionic, covalent and co-ordinate compounds, polar and non-polar bonds, electronegativity and | | |

nature of bonds.

Stoichiometry: Atomic weights, molecular weight, equivalent weight, problems based on weight – weight relationship, weight-volume relations and their applications in textiles.

| Unit III | Inorganic compounds used in textiles | 06 Hours |
|---|--------------------------------------|----------|
| <p>Properties and textile applications of ammonium sulphate, ferrous sulphate, zinc oxide, sodium carbonate, sodium hydroxide, Glauber's salt, vacuum salt, sodium perborate, sodium hydrosulphite, hydrogen peroxide, peracetic acid, sodium silicate, potassium permanganate.</p> | | |
| Unit IV | Metallic Material & Corrosion | 07 Hours |
| <p>Metallic Materials: Introduction to metallic materials, alloys: definition, classification, purposes of making alloys, composition, properties and applications of ferrous alloys: plain carbon steels, stainless steel, nonferrous alloys: Brass, Bronze, Nichrome, Duralumin.</p> <p>Corrosion: Introduction to corrosion, definition, causes, classification, types of oxide films on metal surfaces, atmospheric corrosion, electrochemical corrosion and mechanisms, factors affecting the rate of corrosion, prevention of corrosion by Cathodic protection, Galvanizing, Tinning, Metal spraying, Electroplating.</p> | | |
| Unit V | Structural material | 06 Hours |
| <p>Refractories: Introduction and classification of refractories, Properties of refractories, Manufacturing of refractories, Refractory bricks- Zirconia, High -Alumina, Chromite.,</p> <p>Abrasives: Introduction to abrasives, Natural abrasives- Diamond, Corundum, Emery, Garnets, Quartz. Artificial abrasives- Carborandom, Boron Carbide.</p> <p>Composite material: FRP and GRP, processing of fibre reinforced composites. Glass wool.</p> | | |
| Unit VI | Energy Technology | 07 Hours |
| <p>Fuel: Introduction, classification, characteristics of good fuel, determination of calorific value by Bomb and Boy's calorimeter, numerical problems.</p> <p>Battery: Introduction, Classification of batteries- Primary, Secondary and Reserve batteries. Lithium Cell Batteries</p> <p>Solar Cells: Introduction, working, photo electric effect.</p> <p>Fuel cells: Introduction, classification, Alkaline fuel cell, Hydrogen – Oxygen fuel cell, and Phosphoric acid fuel cell.</p> | | |

Reference Books:

1. A textbook, "Engineering Chemistry" (15th Ed.) by P. C. Jain & Monica Jain, Dhanpat Rai & Co.
2. Engineering Chemistry, S. S Dhara, 2013, S. Chand Publications, 4th Edition, ISBN: 812-1997658.
3. Engineering Chemistry, O.G.Palanna, Tata McGraw Hill Education Pvt. Ltd. New Delhi, Fourth Reprint 2017. ISBN: 978-0070146105.
4. "Industrial Chemistry" by A. K. Sharma, Goel Publishing House.
5. Modern Approach Elementary Inorganic Chemistry by Bahl & Sharma.
6. Material science and metallurgy by C. Daniel Yesudian and D.G. Harris Samuel.
7. A New Concise Inorganic Chemistry by J.D. Lee.
8. A Text book of Material Science by V.K. Manchanda.
9. The Nanoscope by Dr. Parag Diwan & Ashish Bharadwaj.
10. Advanced Materials and Nanotechnology for Sustainable Energy and Environmental Applications, ISBN 978-3-0365-5229-3 (hardback); ISBN 978-3-0365-5230-9 (PDF)
doi.org/10.3390/books978-3-0365-5230-9.
11. Fundamental Inorganic Chemistry by P.L. Soni.
12. Fundamental concepts of Inorganic Chemistry by E.S. Gilreath.
13. A text book of Quantitative Inorganic Chemistry by A.I. Vogel.

Supplementary Readings:

Smart Polymers and Their Applications-2nd Edition– Elsevier, Editor - Maria Rosa Aguilar Julio San Roman ISBN: 9780081024171.

<https://www.elsevier.com/books/smart-polymers-and-their-applications/aguilar/978-0-08-102416-4>.

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester – I)
01TCP159: Inorganic and Industrial Chemistry Lab

| | | |
|--|---------------|-------------------------------------|
| Teaching Scheme: Practical: 02 Hrs/Week | Credits 01 | Evaluation Scheme: CIE: 50 Marks |
|--|---------------|-------------------------------------|

Course Objectives:

At the end of the course, students will be able to

1. To identify engineering problems to achieve practical solutions through knowledge of purification and testing Methods
2. To achieve practical solutions through knowledge of bonding and inorganic compounds in textile processing.
3. To select appropriate advanced structural material and polymers in industries and society.
4. To analyze and troubleshoot the problems related to energy technology.

Course Outcomes:

At the end of the course, students will be able to

1. Identify engineering problems to achieve practical solutions through knowledge of purification and testing Methods
2. Achieve practical solutions through knowledge of bonding and inorganic compounds in textile processing.
3. Select appropriate advanced structural material and polymers in industries and society.
4. Analyze and troubleshoot the problems related to energy technology.

List of Experiments (Any Twelve)

1. Determination of total hardness of water by EDTA method.
2. Determination of chloride content of water by Mohr's method
3. Determination of dissolved oxygen of water.
4. Determination of total solids & suspended solids of water.
5. Preparation Hexamine Nickel (II) Chloride.
6. Determination of Percentage Purity of NaOCl
7. Separation and detection of cations by using Paper Chromatography.
8. Determination of Strength of Hydrogen Peroxide.
9. Purification of given compound by sublimation.
10. Purification of given compound by a simple distillation.
11. Determination of the melting point/ boiling points of compound.
12. Gravimetric estimation of Barium as Barium Sulphate.
13. Estimation of copper in brass.

14. Determination of rate of corrosion of metal.
15. Demonstration of Daniel cell
16. Proximate analysis of solid fuel.
17. Extraction of soluble matter from cotton fabric using Soxhlet apparatus.

Reference Books:

1. Practical Chemistry by Dr. O.P. Pandey, D. N. Bajpai, Dr. S. Giri, under publication S. Chand & Company pvt. ltd.
2. Experiments and Calculations in Engineering Chemistry by S. S. Dara under S. Chand & Company pvt. ltd.
3. Profiles in analytical chemicals by Dr. N. F. Desai enlarge edition.
4. Analytical Chemistry by Garry D. Christian fifth edition.
5. Introduction to chemical engineering by Walter L. Badger, Juliust T. Banchemo.
6. Chemical information a practical guide to utilization by Yechezkel Wolman 2nd edition.
7. Instrumental methods of chemical analysis by Galen W. Ewing fifth edition under McGraw-Hill international editions.
8. Textbook of Quantitative Chemical Analysis by G. H. Jeffery, J. Bassett, J. Mendham, R. C. Denny.
9. Vogel's text-book of practical organic chemistry by Brian S. Furniss, Antony J. Hannford, Peter W.G. Smith, Austin R. Tatchell fifth edition under Pearson publication.
10. Industrial Chemistry by B. K. Sharma under Goel publication house.
11. Vogel's quantitative inorganic analysis by G. Svehla, B. Sivasankar under Pearson publication.
12. Laboratory practice of organic chemistry by G. Ross Robertson, Thomas L. Jacobs fourth edition under Amerind publishing co. Pvt. Ltd.
13. Chemistry of water by Alla Appa Rao under New age international.
14. Textbook of Quantitative Chemical Analysis by G. H. Jeffery, J. Bassett, J. Mendham, R. C. Denny.
15. Instrumental Methods of Chemical Analysis by G. Chatwal and S. Anand.

Supplementary Readings:

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester – I)
01TCP156: Design Thinking and Drafting Lab

| | | |
|--|-------------------|---|
| Teaching Scheme: Practical: 02 Hrs/Week | Credits 01 | Evaluation Scheme: CIE: 50 Marks |
|--|-------------------|---|

Course Objectives:

1. To introduce procedure for converting an idea into design.
2. To convert 2-dimensional views in to 3-dimensional view.
3. To convert 3-dimensional view from given 2-dimensional views.
4. To understand procedure for drawing development of solids such as cone, cylinder, prism and pyramid.

Course Outcomes:

At the end of the course, students will be able to

1. Generate ideas through design thinking.
2. Draw 2-dimensional views from the given pictorial 3-dimensional view.
3. Draw 3-dimensional view from given 2-dimensional views.
4. Draw Development of lateral surfaces of solids such as cone, cylinder, prism & pyramid.

List of Experiments/ Practical's

1. PPT presentation/Assignments on Design Thinking.
2. PPT presentation/Assignments on Applications of Design Thinking.
3. PPT presentation/Assignments on Case study on design thinking/ redesign/modular design/design for manufacturing and assembly.
4. Lines, Letterings & Dimensioning.
5. Projection of Lines, Auxiliary Plane Method.
6. Projection of Planes, Auxiliary Plane Method.
7. Projection of Solids, Auxiliary Plane Method.
8. Projection of Section of Solids, Auxiliary Plane Method.
9. Conversion of pictorial view into orthographic views.
10. Conversion of pictorial view into sectional orthographic views.
11. Isometric Projections.
12. Development and antidevelopment of lateral Surfaces of solids.

Reference Books:

2. Product Design and Development- Karl Ulrich, Steven Eppinger, Anita Goyal.
2. Engineering Design – George Dieter.
3. Engineering Drawing by N. D. Bhatt & V. M. Panchal.
4. Engineering Drawing by Venugopal.
5. Machine Drawing by N. D. Bhatt & V. M. Panchal.
6. Machine Drawing by K. L. Narayana, Kannaiah P., K. Venkata Reddy.

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester– I)
01TCP157: Idea Lab

| | | |
|--|---------------|-------------------------------------|
| Teaching Scheme: Practical: 02 Hrs/Week | Credits 01 | Evaluation Scheme: CIE: 50 Marks |
|--|---------------|-------------------------------------|

Course Objectives:

1. Understand social innovation concepts and approaches.
2. Identify new and unaddressed social needs.
3. Develop self-awareness concerned to social problems.
4. Design innovative solutions with social impact through application of new models of leadership, team work and creativity techniques.

Course Outcomes:

At the end of the course, students will be able to

1. Identify the problems faced by the society.
2. Generate different ideas through creativity and brainstorming.
3. Apply problem solving techniques to derive best solution.
4. Design and develop innovative solution to the social problems.

List of Experiments

1. Visit to the social sites for identification of social needs and community problems.
2. Understanding of the need, description, problem definition, social and economic constraints for affordable and appropriate technology.
3. Sessions on creativity, innovation and new product development
4. Demonstration of modern manufacturing facilities available at the institute
5. Demonstration of automation and programming tools.
6. Personal implementation of social awareness concerned to community problems
7. Active sessions on brainstorming, idea generation and problem solving techniques
8. Mini project to develop solutions regarding social needs

Reference Books:

1. The Open Book of Social Innovation: Ways to Design, Develop and Grow Social Innovation, Paperback March, 2010 by Robin Murray, Julia Caulier-Grice, Geoff Mulgan
2. The Power of Social Innovation: How Civic Entrepreneurs Ignite Community Networks for Good, 1st Edition by Stephen Goldsmith, Michael R. Bloomberg, Gigi Georges, Tim Glynn Burke.
3. Social innovator series: ways to design, develop and grow social innovation, the open book of social innovation by robin murray julie caulier-grice geoff mulgan.
4. The International Handbook on Social Innovation: Collective Action, Social Learning

and Transdisciplinary Research Paperback by Frank Moulaert, Diana MacCallum.
5. Guide to Social Innovation by Johannes HAHN and Laszlo ANDOR7.

Supplementary Readings:

- <https://epdf.tips/the-power-of-social-innovation-how-civic-entrepreneurs-ignite-communitynetworks.html>
- <http://www.idmais.org/desislabs/wp-content/media/social.pdf>

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Technology) (Semester– I)
01TCP158: Professional Communication Lab

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|--|------------------|-------------------------------------|
| Teaching Scheme: Tutorial: 2 Hrs/Week | Credits 2 | Evaluation Scheme: CIE: 50 Marks |
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Course Objectives:

1. Understand the importance of listening, speaking, reading and writing skills which are beneficial to enhance communication skill.
2. To acquaint the students with English phonology and make them practice correct Pronunciation.
3. To make them aware about effective writing skills along with accurate grammar and vocabulary.
4. To help them communicate effectively and to present their ideas confidently.

Course Outcomes:

At the end of the course, students will be able to

1. Apply the learnt knowledge of LSRW skills while communicating.
2. Comprehend English Sounds, stress pattern and intonation.
3. Compose formal letters, emails and job application with accurate grammar and vocabulary.
4. To exhibit oratorical skills by giving oral presentations.

List of Experiments

1. SWOT Analysis --Understanding self
2. Communicative Grammar
3. Communicative vocabulary
4. Drafting Simple application letter and E mail writing
5. Writing Effective Resume
6. Common Errors in pronunciation (phonetics)
7. Interview techniques
8. Extempore
9. Formal presentation on given topic
10. Group Discussion

Reference Books:

1. Communication skills for Engineers by Sunita Mishra & C. Muralikrishna (Pearson)
2. Communication Techniques and Skills by R K Chaddha
3. Body Language by Allen Pease.
4. Speaking Effectively by Jeremy Comfort, Pamela Rogerson, Cambridge University Press

New Delhi

5. Soft Skills for Managers by Dr. T. KalyanaChakravarthi, Dr. T. LathaChakravarthi, Biztantra

6. Soft Skills for every one by Jeff Butterfield, Cengage

7. Professional communication skills by A.K. Jain, S.Chand

8. Developing Communication Skills by Krishna Mohan & Meera Banerji (Macmillan)

Supplementary Readings:

Language lab ---- softwares to enhance communication skill and pronunciation.

SCHEME OF ASSESSMENT: CIE

Submission – Completed Journal and assignments.

| | |
|-------------|---|
| TUTORIALS | 30 MARKS (Attendance, writing, performance) |
| ASSIGNMENTS | 10 MARKS |
| ORAL | 10 MARKS |

**DKTES Textile and Engineering Institute, Ichalkaranji,
First Year B. Tech. (Textile Chemistry) (Semester – I)
01TCP160: Physical Chemistry Lab**

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|--|---------------|-------------------------------------|
| Teaching Scheme: Practical: 02 Hrs/Week | Credits 01 | Evaluation Scheme: CIE: 50 Marks |
|--|---------------|-------------------------------------|

Course Objectives:

1. To explain different types solutions and apply the phase rule.
2. To apply the laws of thermodynamics, thermochemistry and chemical kinetics.
3. To select appropriate advanced material and catalyst during various process in industry.
4. To apply the knowledge of photochemistry and various spectroscopic methods of analysis.

Course Outcomes:

At the end of the course, students will be able to

1. Explain different types solutions and apply the phase rule.
2. Apply the laws of thermodynamics, thermochemistry and chemical kinetics.
3. Select appropriate advanced materials and catalyst during various process in industry.
4. Apply the knowledge of photochemistry and various spectroscopic methods of analysis.

List of Experiments (Any Twelve)

1. Estimation of Na_2CO_3 and NaOH from the mixture
2. Determination of SAP value of oil.
3. Determination of normality of solution conductometrically.
4. Determination of normality of given acid solution potentiometrically.
5. Determination of viscosity of liquid samples by using Ostwald's viscometer.
6. Determination of the percentage composition of the given unknown mixture using Ostwald's viscometer by graphical method.
7. Determination of the critical micelle concentration (CMC) of the given surfactant by surface tension measurement using a Stalagmometer.
8. Study of the Chemical Kinetics of H_2O_2 decomposition.
9. Determination of energy of activation of a (first order) reaction of hydrolysis of $\text{CH}_3\text{COOC}_2\text{H}_5$ in the presence of 0.5 N H_2SO_4 .
10. Determination of rate constant for the hydrolysis of $\text{CH}_3\text{COOC}_2\text{H}_5$ (first order) in the presence of 0.5 N HCl .
11. Determination of rate constant of (second order) reaction between $\text{K}_2\text{S}_2\text{O}_8$ and KI (unequal concentration).
12. Determination of heat of neutralization.
13. Determination of heat of reaction between CuSO_4 and zinc dust.
14. Demonstration of UV-visible spectrophotometer instrument on its working principle.

15. Demonstration of IR instrument on its working principle.
16. Study of the effect of change in temperature on the rate of reaction between $\text{Na}_2\text{S}_2\text{O}_3$ & HCl.
17. Evaluation of adsorption of acetic acid on charcoal.

Reference Books:

1. Practical Chemistry by Dr. O.P. Pandey, D. N. Bajpai, Dr. S. Giri, under publication S. Chand & Company pvt. ltd.
2. Experiments and Calculations in Engineering Chemistry by S. S. Dara under S. Chand & Company pvt. ltd.
3. Profiles in analytical chemicals by Dr. N. F. Desai enlarge edition.
4. Analytical Chemistry by Garry D. Christian fifth edition.
5. Introduction to chemical engineering by Walter L. Badger, Juliust T. Banchemo.
6. Chemical information a practical guid to utilization by Yecheskel Wolman 2nd edition.
7. Instrumental methods of chemical analysis by Galen W. Ewing fifth edition under McGraw-Hill international editions.
8. Textbook of Quantitative Chemical Analysis by G. H. Jeffery, J. Bassett, J. Mendham, R. C Denn.
9. Vogel's text-book of practical organic chemistry by Brian S. Furniss, Antony J. Hannford, Peter W.G. Smith, Austin R. Tatchell fifth edition under Pearson publication.
10. Industrial Chemistry by B. K. Sharma under Goel publication house.
11. Vogel's quantitative inorganic analysis by G. Svehla, B. Sivasankar under Pearson publication.
12. Laboratory practice of organic chemistry by G. Ross Robertson, Thomas L. Jacobs fourth edition under Amerind publishing co. Pvt. Ltd.
13. Chemistry of water by Alla Appa Rao under New age international.
14. Textbook of Quantitative Chemical Analysis by G. H. Jeffery, J. Bassett, J. Mendham, R. C Denny.
15. Instrumental Methods of Chemical Analysis by G. Chatwal and S. Anand.

Advanced Materials and Nanotechnology for Sustainable Energy and Environmental Applications. ISBN 978-3-0365-5229-3 (hardback); ISBN 978-3-0365-5230-9 (PDF) doi.org/10.3390/books978-3-0365-5230-9.

**First Year B. Tech - Textile Chemistry
Semester-II**

| Sr. No. | Course Code | Course Title | Course Category | Teaching scheme | | | | Course Credits |
|---------|-------------|---|-----------------|-----------------|----------|----------|-----------------|----------------|
| | | | | L | T | P | Contact Hrs./wk | |
| 1 | 01TCL161 | Mathematics and Statistics - II | BSC | 3 | | | 3 | 3 |
| 2 | 01TCP162 | Indian Traditional Textiles | IKS | | 2 | | 2 | 2 |
| 3 | 01TCL163 | Applied Mechanics | ESC | 3 | | | 3 | 3 |
| 4 | 01TCL164 | Electrical Technology | ESC | 3 | | | 3 | 3 |
| 5 | 01TCL165 | Organic Chemistry | ESC | 3 | | | 3 | 3 |
| 6 | 01TCL101 | Chemistry of Natural Fibres | PCC | 3 | | | 3 | 3 |
| 7 | 01TCP166 | Electrical Technology Lab | AEC01 | | | 2 | 2 | 1 |
| 8 | 01TCP167 | Organic Chemistry Lab | VSEC | | | 2 | 2 | 1 |
| 9 | 01TCP168 | Chemistry of Natural Fibres Lab | VSEC | | | 2 | 2 | 1 |
| 10 | 01TCP169 | Basic Computer Programming Lab | AEC01 | | | 2 | 2 | 1 |
| 11 | 01TCI170 | Democracy, Election and Good Governance (Audit) | IKS | | | | | - |
| | | Total | | 15 | 2 | 8 | 25 | 21 |

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester –II)
01TCL161: Mathematics and Statistics- II

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|--|--------------|---|
| Teaching Scheme: Lectures: 3 Hrs/Week | Credits 3 | Evaluation Scheme: SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks |
|--|--------------|---|

Course Objectives:

1. Prepare students to understand mathematical rules used for tracing Cartesian and Polar curves. Also, to prepare them for curve fitting using method of least square.
2. Prepare students with the multiple integrals and its applications. Also, to prepare them with complex numbers, Hyperbolic functions.
3. Prepare students with statistical methods so that they can understand analysis of bivariate data, correlation and regression.
4. Prepare students to understand probability, random variable and probability distributions. Also, to solve textile engineering problems using probability distributions.

Course Outcomes:

At the end of the course, students will be able to

1. Rules of tracing Cartesian and Polar curves. Also, they are able for trace curves.
2. The theory multiple integrals and its applications. Also, they are able to use the theory of complex numbers to separate real and Imaginary Parts.
3. Concept of bivariate statistical data, Correlation analysis and Regression analysis with examples.
4. The concept of random variable with type and probability distribution of random variable with types. Also, they are able to solve textile problems using Binomial, Poisson and Normal probability distributions.

Course Contents

| Unit I | Curve Tracing & Curve fitting | 07 Hours |
|---|----------------------------------|----------|
| Rules and examples of curve tracing in Cartesian and Polar Equations only, Fitting of curves: linear equation $y=a+bx$, quadratic equation $y=a+bx+cx^2$ using least square method | | |
| Unit II | Integral Calculus & Applications | 08 Hours |
| Reduction formulae of sine and cosine functions, Gamma function, Beta Function (NO EXAMPLES), Multiple integrals: Introduction, solution of multiple integral also solution using change of order & Change of variables method. Application of integrals for finding Area, Mass of lamina up to double integrals only. | | |
| Unit III | Complex Numbers | 05 Hours |
| Introduction of Complex numbers, De Moivre's theorem, Circular, Hyperbolic and Inverse hyperbolic functions, Separation into real & imaginary parts. | | |

| Unit IV | Bivariate data | 07 Hours |
|---|--|-----------------|
| Correlation: Definition, types, coefficient of correlation, properties & interpretation. Rank correlation coefficient & computation and interpretation. Regression: Regression concept and types. Lines of regression X on Y & Y on X, regression coefficients with properties & computation. | | |
| Unit V | Probability distribution | 07 Hours |
| Introduction of probability and its basic laws. Random variable: Definition, types. Introduction of probability distribution, types of probability distribution, pmf & pdf, expectation of random variable. MGF of random variable. Standard discrete probability distributions: Binomial probability distribution: Definition, properties, fitting & examples. Poisson probability distribution: Definition, properties, fitting & examples. | | |
| Unit VI | Standard continuous probability distributions | 06 Hours |
| Normal probability distribution: Definition, properties, standard normal distribution & examples. Chi-square probability distribution (χ^2): Definition & properties only. t-probability distribution: Definition & properties only. F- probability distribution: Definition & properties only. Introduction of statistical table for Z, t, χ^2 , & F | | |
| Reference Books: | | |
| <ol style="list-style-type: none"> 1. A textbook of applied mathematics Vol.-I & II by P.N. & J.N. Wartikar 2. Higher engineering mathematics by B.S. Grewal 3. A textbook of applied mathematics by Bali, Saxena, Iyengar. 4. Mathematical Statistics by J.E. Freund. 5. Probability & Statistics for engineers by Johnson. 6. Statistical methods by Kumbhojkar. | | |

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester –II)
01TCP162: Indian Traditional Textiles

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|--|--------------|-------------------------------------|
| Teaching Scheme: Tutorial: 2 Hrs/Week | Credits 2 | Evaluation Scheme: CIE: 50 Marks |
|--|--------------|-------------------------------------|

Course Objectives:

1. Explain fibres, yarns, fabrics, processing methods and apparels used in historical India.
2. Explain the distinctiveness of Indian traditional textiles.
3. Explain the historical and cultural influences on Indian traditional textiles.
4. Explain importance of preserving and promoting Indian traditional textile techniques and their cultural heritage.

Course Outcomes:

At the end of the course, students will be able to

1. Describe the distinctiveness of Indian traditional textiles.
2. Analyse the historical and cultural influences on Indian traditional textiles.
3. Explain importance of preserving and promoting Indian traditional textile techniques and their cultural heritage.
4. Develop effective research and presentation skills through topics related to Indian traditional textiles.

Course Contents

| Unit I | Indian Traditional Fibres | 3 Hours |
|---|---|----------------|
| Introduction to Indian traditional fibres. Plant fibres: cotton, jute, flax, hemp, etc., Animal fibres: wool, silk, camel hair, etc. Historical significance and cultural relevance of traditional fibres. Techniques and tools used for processing of traditional fibres. Properties and applications of traditional fibres. | | |
| Unit II | Indian Traditional Yarns | 3 Hours |
| Traditional spinning techniques: Hand spinning, Charkha, Takli, Drop spindle, etc. Different types of traditional yarns: handspun cotton, silk and woollen yarn. Evolution of yarn-making techniques in India. Role of yarns in Indian textile traditions and crafts. Applications of traditional yarns. | | |
| Unit III | Indian Traditional Fabrics | 4 Hours |
| Overview of Indian traditional fabrics. Handloom weaving techniques: Pit loom, Frame loom, Backstrap loom, etc. Region-wide variations in weaving styles and motifs. Muslin cloth. Historical and cultural significance of Indian traditional fabrics. Revival and preservation of traditional fabric techniques. | | |
| Unit IV | Indian Traditional Dyeing and Printing | 4 Hours |
| Introduction to Indian traditional dyeing and printing techniques. Natural dyeing methods: Indigo, Madder, Turmeric, Lac, etc. Traditional block printing: Bagru, Sanganer, Kalamkari, Ajrakh, etc. Tie and dye techniques: Bandhani, Leheriya, Patola, etc. Preservation and modern adaptations of | | |

traditional dyeing and printing techniques.

| Unit V | Indian Ancient Costumes | 4 Hours |
|--|---|----------------|
| Male and female attire in Indus valley civilization, Vedic era, Maurya period, Kushan period, Chola period, Gupta period. | | |
| Unit VI | Costumes in Different Parts of India | 6 Hours |
| Speciality fabrics of different parts of India: Maheshwari, Banarasi, Jamdani, Paithani, Kota, Gadwal, Venkatgiri, Gharchola, Kanjeeveram, Batik, Barabanki, Dhoti, Lungi, Kurta Pajama, Shervani, Ghagra, Lehenga, Choli, Pagri, etc. | | |
| Reference Books: | | |
| 1 Jasleen Dhamija, Handwoven Fabrics of India, Abhinav Publications, 2004, ISBN: 978-8170174342. | | |
| 2 Ritu Kumar, Costumes and Textiles of Royal India, Antique Collectors' Club, 2006, ISBN: 978-1851493174. | | |
| 3 B.N. Goswamy, Indian Costumes in the Collection of the Calico Museum of Textiles, Mapin Publishing, 2009, ISBN: 978-1890206842. | | |
| 4 K.R. Subanna, Indian Dyes and Dyeing Industry in the 18th and 19th Centuries, Manohar Publishers, 1999, ISBN: 978-8173042730. | | |
| 5 Jasleen Dhamija, Asian Embroidery, Brijbasi Art Press, 2003, ISBN: 978-8188230062. | | |
| 6 Rahul Jain, Indian Textiles: Past and Present, Aryan Books International, 2012, ISBN: 978-8173054085. | | |
| 7 Rta Kapur Chishti, Saris: Tradition and Beyond, Roli Books, 2012, ISBN: 978-8174369213. | | |
| 8 Martand Singh, Indian Embroideries, Roli Books, 2009, ISBN: 978-8174365055. | | |
| 9 Usha Balakrishnan, Carpets and Floor Coverings of India, Roli Books, 2010, ISBN: 978-8174367707. | | |
| 10 Manorama Bawa, Indian Cotton Textiles: Seven Centuries of Chintz from the Karun Thakar Collection, Prestel Publishing, 2013, ISBN: 978-3791352666. | | |

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester– II)
01TCL163: Applied Mechanics

| | | |
|---|------------------|---|
| Teaching Scheme: Lectures: 03 Hrs/Week | Credits 3 | Evaluation Scheme: SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks |
|---|------------------|---|

Course Objectives:

1. To explain the concept of forces, couple and laws related to force with basic principles and theorems.
2. To analyze the concepts like static equilibrium, support reactions, friction and moment of inertia to solve basic engineering problems.
3. To analyze the effect of various types of forces on the bodies in dynamic equilibrium conditions to solve basic engineering problems.
4. To explain the concept of transmission of motion and power in various machines by using various drives, bearings and simple lifting machines used in textiles.

Course Outcomes:

At the end of the course, students will be able to

1. Use the concept of forces and various laws related to force with basic principles, theorems.
2. Use concepts like equilibrium, support reactions, friction and moment of inertia to solve basic engineering problems.
3. Analyze the effect of various types of forces on the bodies in dynamic conditions to solve basic engineering problems.
4. Interpret the concept of transmission of motion and power in various machines by using various drives, bearings and simple lifting machines used in textiles.

Course Contents

| Unit I | Fundamentals of statics | 05 Hours |
|--|--------------------------------|-----------------|
| Statics, dynamics, Force, system of forces, Resultant force and equilibrant, principle of transmissibility of force, moment of force. Couple, Law of parallelogram of forces, Varignon's theorem, Composition and resolution of Coplanar concurrent and non-concurrent forces. | | |
| Unit II | Equilibrium | 10 Hours |
| Equilibrium of Coplanar forces, Conditions of equilibrium, free body diagram, Lami's theorem. Friction: Introduction to friction, types of friction, Laws of friction. Cone of Friction. Beams: Types of beams, Types of Loads, Types of supports, Analysis of Simply supported beams. | | |
| Unit III | Moment of Inertia | 06 Hours |
| Centroid and Centre of gravity, Centroid of composite areas, Radius of Gyration, parallel axis theorem, perpendicular axis theorem, Moment of inertia of composite sections | | |

| Unit IV | Lifting Machines | 04 Hours |
|--|---|-----------------|
| <p>Mechanical advantage, velocity ratio, efficiency, law of machine, effort lost in friction, load lost in friction, Study and numerical examples on simple machines- Simple screw jack, Simple axle and wheel, differential axle and wheel, worm and worm wheel.</p> | | |
| Unit V | Kinematics and Kinetics | 08 Hours |
| <p>Kinematics of Linear motion: Equations of linear motion with constant and variable acceleration, motion under gravity.</p> <p>Kinematics of Angular motion: Relation between angular motion & linear motion, Equations of angular motion, Centrifugal & centripetal forces, Motion along a curved path, Banking of roads.</p> <p>Kinetics: Newton's laws of motion, Mass moment of inertia, D'Alemberts principle, work, power, energy, impulse, Work- Energy Principle, Impulse- Momentum Principle, Principle of conservation of energy.</p> | | |
| Unit VI | Transmission of motion and power | 06 Hours |
| <p>Belt, rope, chain and gear drives, P.I.V. drives, Type of gears and gear drives, Gear trains, velocity ratio, advantages of gear drives, uses in textile machines, Concept of epicyclic gearing. Types of bearing and their applications (Only theory, no numerical examples on this topic)</p> | | |
| <p>Reference Books:</p> <ol style="list-style-type: none"> 1. Engineering Mechanics by R. K. Bansal and Sanjay Bansal, Laxmi Publications 2. Applied Mechanics by R.S. Khurmi, S. Chand Publications. 3. Engineering Mechanics by S. S. Bhavikatti, New Age International Pvt. Ltd. 4. Engineering Mechanics by S. Ramamrutham, DhanpatRai and Sons. 5. Fundamentals of Engineering Mechanics by S. Rajasekaran, Sankarasubramanian, Vikas Publishing House. 6. Applied Mechanics by S.N. Saluja, SatyaPrakashan, New Delhi. 7. Engineering Mechanics by S. B. Junnarkar, Charotar Publishing House Pvt. Ltd. 8. Vector Mechanics for Engineers Vol. I & II, by Beer & Jonhstan, Tata Mc-Graw Hill Publication. | | |

DKTES Textile and Engineering Institute, Ichalkaranji
Frist Year B. Tech. (Textile Chemistry) (Semester II)
01TCL164: Electrical Technology

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|--|---------------|---|
| Teaching Scheme: Lectures: 3 Hrs/Week | Credits 03 | Evaluation Scheme: SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks |
|--|---------------|---|

Course Objectives:

1. To understand basic concepts of Electrical and Magnetic circuits.
2. To understand concepts of elements and parameters in Single Phase circuit.
3. To understand concepts of elements and parameters in three phase AC circuits and Three phase Induction motor and Transformer.
4. To implement Electrical Protection and Safety devices and importance Energy Efficient Systems.

Course Outcomes:

At the end of the course, students will be able to

1. To solve and design Electrical and Magnetic circuit.
2. To solve and design Single phase A.C. circuit.
3. To distribute three phase Electrical energy and use of Induction motor and Transformer.
4. To implement Electrical Protection and Safety devices and importance Energy Efficient Systems.

Course Contents

| Unit I | Electrical Circuit | 07 Hours |
|--|---|----------|
| Basic electrical quantities, Concept of E.M.F, Potential Difference, current, Resistance, Ohm's Law, Kirchoff's laws, mesh and node analysis, Energy conversations. Numericals. | | |
| Unit II | Magnetic Circuit | 07 Hours |
| Flux, flux density, Reluctance, field intensity, permeability, mmf, comparison of Electric and Magnetic circuit, leakage and fringing, B-H, Numericals on simple magnetic circuit | | |
| Unit III | Single phase A. C. circuit | 06 Hours |
| Faraday's Laws, Lenz's Law, self and mutual emfs, generation of sinusoidal E.M.F. in single phase alternator, R.M.S. & Average value, form factor, peak factor, Phasor representation, R-L, R-C, R-L-C series circuits, powers, power factor and its improvement capacitor method Numerical. Single line diagram. | | |
| Unit IV | Three Phase A. C. circuit and Induction Motor | 07 Hours |
| Introduction to three phase supply and its advantages, Generation of three phase A.C. voltage, balanced system, relation between line and phase quantities in star and delta its numerical. Three Phase Induction Motor Working Principle, Constructional Details, Types, Rotating Magnetic field, Necessity of starters, Speed Control by variable Frequency Drive (VFD) used in Ring frame, motors used in Textile Industry. | | |

| Unit V | Transformer | 07 Hours |
|--|---------------------------------------|-----------------|
| Construction, operating principle, Types, EMF equation, Concept of Ideal and practical Transformer, Transformation Ratio, operation on No load and with load of ideal transformer, losses, efficiency, voltage regulation, its Numerical. Use in Textile Industry. | | |
| Unit VI | Electrical Protecting Devices. | 05 Hours |
| Importance of Earthing, Fuse (Rewirable and HRC), MCB. Construction of CFL, LED lamp, Introduction of Energy efficient system & EEM motors. Concept of Power Quality. | | |
| Reference Books: | | |
| <ol style="list-style-type: none">1. Elements of electrical Engineering by U.A. Bakshi2. Electrical Technology by U.A. Bakshi3. Basic Electrical Engineering by B. H. Deshmukh4. A text book in electrical technology by B. L. Thareja.5. Fundamentals of Electrical Engineering by Ashfaq Husain6. Basic Electrical Engineering by Mehta V.K. & Mehta Rohit7. Basic Electrical Engineering by J.B. Gupta8. Basic Electrical Engineering by DP Kothari, I J Nagrath | | |
| Supplementary Readings: https://nptel.ac.in https://easyengineering.net/basic-electrical-engineering-by-bakshi-nw/ | | |

DKTES Textile and Engineering Institute, Ichalkaranji

First Year B. Tech. (Textile Chemistry) (Semester – II)

01TCL165: Organic Chemistry

| | | |
|---|---------------|---|
| Teaching Scheme: Lectures: 03 Hrs/Week | Credits 03 | Evaluation Scheme: SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks |
|---|---------------|---|

Course Objectives:

1. To explain different types organic reactions and mechanism.
2. To elaborate preparation, properties and applications of various organic compounds in textile.
3. To illustrate polymers and stereochemistry involved in various organic compounds.
4. To explain the importance of sustainable chemistry and select environment benign approaches for organic synthesis in industry.

Course Outcomes:

At the end of the course, students will be able to

1. Explain different types organic reactions and mechanism.
2. Elaborate preparation, properties and applications of various organic compounds in textile.
3. Illustrate polymers and stereochemistry involved in various organic compounds.
4. Explain the importance of sustainable chemistry and select environment benign approaches for organic synthesis in industry.

Course Contents

| Unit I | General Organic Reactions and Mechanism | 06 Hours |
|---|--|-----------------|
| Introduction, bond fission, types of organic reactions, types of reagents, kinetic and thermodynamic control, reactive intermediates. | | |
| Reaction mechanism: Nitration, Sulphonation, Halogenation, Friedel Crafts alkylation, Friedel Crafts acylation of benzene, Benzidine rearrangement, Michael addition, Reformatsky reaction, Aldole condensation. | | |
| Unit II | Oxygen containing organic compounds | 07 Hours |
| Introduction, preparation, properties and applications of 1 ^o , 2 ^o , 3 ^o alcohols. | | |
| Introduction, preparation, properties and applications of phenol and its derivatives. | | |
| Introduction, preparation, properties and applications of ether and epoxide. | | |
| Introduction, preparation, properties and applications of aldehydes and ketones. | | |

| Unit III | Nitrogen containing organic compounds | 06 Hours |
|---|---------------------------------------|----------|
| <p>Introduction, preparation, properties and applications of nitrobenzene.</p> <p>Introduction, preparation, properties and applications of aniline.</p> <p>Introduction, preparation, properties and applications of diazonium salts.</p> | | |
| Unit IV | Stereochemistry | 07 Hours |
| <p>Introduction, stereoisomerism,</p> <p>Optical isomerism: Enantiomers, Distereoisomers, Meso form, Racemic Mixture. Fischer projection formula, relative configuration (<i>d</i> & <i>l</i>), absolute configuration (R & S).</p> <p>Geometrical isomerism: Cis-Trans isomerism, E & Z nomenclature,</p> <p>Conformational isomerism: Conformational isomerism of Ethane, Butane and Cyclohexane.</p> | | |
| Unit V | Organic Polymer | 07 Hours |
| <p>Natural Polymer:</p> <p>Polysaccharide: starch: sources, constitution, properties of starch paste: soluble starch and dextrin, action of enzymes, manufacture of starch from maize, cellulose: sources, constitution, chemical and physical properties.</p> <p>Polyamides: Introduction, amino acids, isoelectronic point, peptide linkage, polyamide polymers.</p> <p>Synthetic Polymer: Synthesis and applications of phenol formaldehyde and urea formaldehyde resins.</p> | | |
| Unit VI | Sustainable chemistry | 06 Hours |
| <p>Introduction, hazardous and toxic organic solvents, MSDS of chemicals, sustainable solvents,</p> <p>Environment benign techniques: Introduction and use of Ultrasound, Microwave, Ionic Liquid, Phase Transfer Catalyst for organic reactions.</p> <p>Supramolecules: Crown ethers, Cyclodextrins, Dendrimers.</p> | | |
| Reference Books: | | |
| <ol style="list-style-type: none"> 1. Organic Chemistry by R. T. Morrison and R. N. Boyd. 2. Stereochemistry of organic compounds by D. Nasipuri. 3. A text book of Organic Chemistry by P.L. Soni. 4. A text book of Organic Chemistry by B.S. Bahl and A. Bahl. | | |

5. Instrumental Methods of Chemical Analysis by G. Chatwal and S. Anand
6. A text-book of practical organic chemistry by A. I. Vogel.
7. Supramolecular Chemistry II - Host Design and Molecular Recognition.
8. Advanced Organic Chemistry by Jerry March.
9. Chemistry of Organic Textile Chemicals by Dr. V.A. Shenai.
10. Technology of textile processing Volume-VII Synthetic Organic Textile Chemicals.
11. A textbook of organic chemistry by Raj K.Bansal.
12. Stereochemistry of carbon compounds by Ernst L. Eliel.
13. Textile chemistry by Vishnu Arora.
14. Organic Chemistry by Solomons and Fryhle eight edition under Wiley india publications.
15. Elementary organic spectroscopy by Y.R. Sharma.
16. Polymer sciences and technology by Joel R. Fried.
17. Text book of polymer science by Fred W. Billmeyer, Jr.
18. Organic chemistry of high polymers by Lenz.
19. Fundamentals of polymers by Anilkumar and Rakesh K. Gupta.
20. Principles of Polymerisation by George Odian.
21. Introduction to polymer chemistry by G.S. Mishra.
22. Polymer science and technology of plastics & rubbers by Dr. Premamoy Ghosh.
23. Polymer Science by V.R. Gowarikar, N.V. Viswanathan & Jaydev Shreedhar.

Supplementary Readings:

Smart Polymers and Their Applications-2nd Edition– Elsevier, Editor - Maria Rosa Aguilar Julio San Roman ISBN: 9780081024171.

<https://www.elsevier.com/books/smart-polymers-and-their-applications/aguilar/978-0-08-102416-4>.

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester – II)
01TCL101: Chemistry of Natural Fibres

| | | |
|--|---------------|---|
| Teaching Scheme: Lectures: 03 Hrs /Week | Credits 03 | Evaluation Scheme: SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks |
|--|---------------|---|

Course Objectives:

1. To describe concepts of textiles
2. To describe chemistry and morphology of fibres.
3. To impart knowledge about the physical and chemical properties of fibres
4. To explain details about the effect of fibre properties in chemical wet processing of textiles and predict applications of fibres.

Course Outcomes:

At the end of the course, students will be able to

1. Understand basic concepts of textiles
2. Understand chemistry and morphology of fibres.
3. Examine physical and chemical properties of fibres
4. Use knowledge of fibre properties in chemical wet processing of textiles and predict applications of fibres.

Course Contents

| Unit I | Introduction to Textiles | 06 Hours |
|-----------------|--|-----------------|
| | Concept of fibre, yarn, rope, fabrics; Sequence of operations for conversion of natural and manmade fibres into finished fabrics. Concept of weaving, knitting and non-woven. General production sequence of fabric to garment manufacturing, Concept of processing and finishing of fabrics and garments. | |
| Unit II | Textile Fibres | 06 Hours |
| | Definition of Fibre, Filament, Degree of Polymerization, and Cohesive Energy Density. Classification of fibres according to their chemical nature and origin. Essential and desirable properties of fibres. Concept of crystalline, mesomorphous and amorphous regions and their importance. | |
| Unit III | Cotton Fibre | 09 Hours |
| | Introduction to Cultivation of cotton and varieties of cotton. Chemical Composition of Cotton, Morphological structure of cotton. Chemistry of cellulose, Concept of chemical | |

| | | |
|---|--------------------------------------|-----------------|
| bonding in cotton, Supra-molecular structure of cotton, structure of cellulose-I & cellulose-II, Influence of structure of cotton cellulose on its properties, Chemistry and detection of damage of cellulose, Physical properties, chemical properties and uses of cotton. | | |
| Unit IV | Unconventional Natural Fibres | 07 Hours |
| Introduction to cultivation and varieties of Jute and Flax, Morphological structure and chemical composition of Jute and Flax. Concept of hemicellulose, lignin and their chemistry. Retting and extraction of Jute and Flax, Physical properties, chemical properties and uses of Jute and Flax. | | |
| Unit V | Wool Fibre | 06 Hours |
| Source & grading of wool fibre, Morphological structure, Chemical composition and structure of wool fibre, Production of clean wool, Bonds present in wool fibre, Physical properties, chemical properties and uses of wool. | | |
| Unit VI | Silk Fibre | 05 Hours |
| Varieties of Silk, Sericulture & reeling, Morphological structure and chemical composition of silk, Physical properties, chemical properties and uses of silk. | | |
| Reference Books: | | |
| <ol style="list-style-type: none"> 1. V. A. Shenai, Technology of Textile Processing Volume 1: Textile Fibres, Third Edition revised Sevak Publication, Mumbai (1991) 2. V. R. Gowariker, Polymer Science, New Age International Publishers; Third edition, ISBN: 9387788644, (1 January 2019). 3. J. Gordon Cook, Handbook of Textile Fibres. Volume 1 Natural Fibres, Woodhead Publishing Series in Textiles ISBN:978-1-85573-484-5 (1984). 4. J. Gordon Cook, Handbook of Textile Fibres. Volume 2 Man-Made Fibres, Woodhead Publishing Series in Textiles, ISBN: 978-1-85573-485-2 (1984). 5. Murthy, H. V. Sreenivasa, Introduction to Textile Fibres, Woodhead Publishing India in Textiles, ISBN:978-93-85059-57-5 (1984). 6. S.P. Mishra, A Textbook of Fibre Science and Technology, New Age International (P.) Limited, ISBN: 81-224-1250-5 (2000). 7. S. P. Mishra, Science and Technology of Man-Made Fibres, Suraj Publications., ISBN: 8. R. R. Franck, Bast and other plant fibres, Woodhead Publication Ltd, England, ISBN: 1-85573-684-5 (2005). 9. W. S. Simpson and G. H. Crawshaw, Wool, Science and Technology, Woodhead Publication Ltd, England, ISBN: 1 85573 574 1 (2002) 10. M. L. Gulrajani, Silk Dyeing, Printing and Finishing, Dept. of Textile Technology, Indian Institute of Technology, Hauz Khas, New Delhi, 1988. | | |

DKTES Textile and Engineering Institute, Ichalkaranji
Frist Year B. Tech. (Textile Chemistry) (Semester II)
01TCP166: Electrical Technology Lab

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|---|---------------|-------------------------------------|
| Teaching Scheme: Practical: 2 Hrs/Week | Credits 01 | Evaluation Scheme: CIE: 50 Marks |
|---|---------------|-------------------------------------|

Course Objectives:

1. To understand basic concepts of Electrical and Magnetic circuits.
2. To understand concepts of elements and parameters in Single Phase circuit.
3. To understand concepts of elements and parameters in three phase AC circuits and Three phase Induction motor and Transformer.
4. To implement Electrical Protection and Safety devices and importance Energy Efficient Systems.

Course Outcomes:

At the end of the course, students will be able to

1. To solve and design Electrical and Magnetic circuit.
2. To solve and design Single phase circuit.
3. To distribute three phase Electrical energy and use of Induction motor and Transformer.
4. To implement Electrical Protection and Safety devices and importance Energy Efficient Systems.

List of Experiments

1. General Introduction to Electrical Engineering laboratory.
2. Verification of Ohm's Laws.
3. Verification of Kirchhoff's Current Law.
4. Verification of Kirchhoff's Voltage Law.
5. Determination of Power factor in ac circuit.
6. Determination of Resistance & Inductance of a coil.
7. Study of Phasor Relationship in R-L-C series circuit.
8. Verification of phase and line parameters in three phase system.
9. Determination of Efficiency and Regulation of Single Phase Transformer.
10. Study of different types of Earthing.
11. Study of different types of Protective devices.
12. Study of different types of lamps.

Reference Books:

1. Elements of electrical Engineering by U.A. Bakshi
2. Electrical Technology by U.A. Bakshi
3. Basic Electrical Engineering by B. H. Deshmukh

4. A text book in electrical technology by B. L. Thareja.
5. Fundamentals of Electrical Engineering by Ashfaq Husain
6. Basic Electrical Engineering by Mehta V.K. & Mehta Rohit
7. Basic Electrical Engineering by J.B. Gupta
8. Basic Electrical Engineering by DP Kothari, I J Nagrath

Supplementary Readings:

<https://nptel.ac.in>

<https://easyengineering.net/basic-electrical-engineering-by-bakshi-nw/>

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester – II)
01TCP167: Organic Chemistry Lab

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|--|---------------|-------------------------------------|
| Teaching Scheme: Practical: 02 Hrs/Week | Credits 01 | Evaluation Scheme: CIE: 50 Marks |
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Course Objectives:

1. To explain different types organic reactions and mechanism.
2. To elaborate preparation, properties and applications of various organic compounds in textile.
3. To illustrate polymers and stereochemistry involved in various organic compounds.
4. To explain the importance of sustainable chemistry and select environment benign approaches for organic synthesis in industry.

Course Outcomes:

At the end of the course, students will be able to

1. Explain different types organic reactions and mechanism.
2. Elaborate preparation, properties and applications of various organic compounds in textile.
3. Illustrate polymers and stereochemistry involved in various organic compounds.
4. Explain the importance of sustainable chemistry and select environment benign approaches for organic synthesis in industry.

List of Experiments (Any Twelve)

1. Binary organic mixture separation and its type determination.
2. Determination of molecular weight of organic acid by volumetric analysis.
3. Estimation of Glucose.
4. Preparation of Acetanilide from Aniline.
5. Preparation of p-Nitroacetanilide from Acetanilide.
6. Preparation of Dibenzalacetone.
7. Estimation of Acetone.
8. Estimation of Ethylene glycol.
9. Qualitative analysis of carbohydrates and proteins.
10. Analysis of Cis-Trans isomerism via melting points of butenedioic acid.
11. Preparation of urea-formaldehyde resin.
12. Preparation of phenol-formaldehyde resin.
13. Proximate analysis of starch.

14. Separation of the given mixture of two immiscible liquids using separatory funnel.
15. Purification of given organic compound by crystallization by using appropriate solvent.
16. Demonstration of Ultrasound sonicator instrument and its working principle.
17. Demonstration of microwave instrument and its working principle.

Reference Books:

1. Practical Chemistry by Dr. O.P. Pandey, D. N. Bajpai, Dr. S. Giri, under publication S. Chand & Company pvt. ltd.
2. Chemical information a practical guide to utilization by Yechezkel Wolman 2nd edition.
3. Textbook of Quantitative Chemical Analysis by G. H. Jeffery, J. Bassett, J. Mendham, R. C Denn.
4. Vogel's text-book of practical organic chemistry by Brian S. Furniss, Antony J. Hannford, Peter W.G. Smith, Austin R. Tatchell fifth edition under Pearson publication.
5. Vogel's quantitative inorganic analysis by G. Svehla, B. Sivasankar under Pearson publication.
6. Laboratory practice of organic chemistry by G. Ross Robertson, Thomas L. Jacobs fourth edition under Amerind publishing co. Pvt. Ltd.
7. Textbook of Quantitative Chemical Analysis by G. H. Jeffery, J. Bassett, J. Mendham, R. C Denny.
8. Instrumental Methods of Chemical Analysis by G. Chatwal and S. Anand.
9. Organic Chemistry by R. T. Morrison and R. N. Boyd.
10. Advanced Organic Chemistry by Jerry March.
11. Chemistry of Organic Textile Chemicals by Dr. V.A. Shenai.
12. Technology of textile processing Volume-VII Synthetic Organic Textile Chemicals.
13. A textbook of organic chemistry by Raj K.Bansal.
14. Stereochemistry of carbon compounds by Ernst L. Eliel.
15. Textile chemistry by Vishnu Arora.
16. Organic Chemistry by R. T. Morrison and R. N. Boyd.
17. Stereochemistry of organic compounds by D. Nasipuri.
18. A text book of Organic Chemistry by P.L. Soni.
19. A text book of Organic Chemistry by B.S. Bahl and A. Bahl.

Supplementary Readings:

Smart Polymers and Their Applications-2nd Edition– Elsevier, Editor - Maria Rosa Aguilar Julio San Roman ISBN: 9780081024171.

<https://www.elsevier.com/books/smart-polymers-and-their-applications/aguilar/978-0-08-102416-4>.

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester – II)
01TCP168: Chemistry of Natural Fibres Lab

Teaching Scheme:
 Practical: 2 Hrs /Week

Credits
 01

Evaluation Scheme:
 CIE: 50 Marks

Course Objectives:

1. To describe concepts of textiles
2. To describe chemistry and morphology of fibres.
3. To impart knowledge about the physical and chemical properties of fibres
4. To explain details about the effect of fibre properties in chemical wet processing of textiles and predict applications of fibres.

Course Outcomes:

At the end of the course, students will be able to

1. Understand basic concepts of textiles
2. Understand chemistry and morphology of fibres.
3. Examine physical and chemical properties of fibres
4. Use knowledge of fibre properties in chemical wet processing of textiles and predict applications of fibres.

List of Experiments

1. Identification of fibres by Microscope Method.
2. Identification of fibres by chemical method. - I
3. Identification of fibres by chemical method. - II
4. Identification of fibres by density gradient column.
5. Determination of moisture regain of fibres.
6. Detection of Honey dew of cotton.
7. Determination of cotton fibre length by using the Grease plate method.
8. Determination of wool fibre length by using the Grease plate method.
9. Measurement of maturity of cotton by caustic soda method.
10. Determination of accessible region of cotton.
11. Detection of cellulosic fibre damage.
12. Detection of animal protein fibre damage.
13. Detection of hemicellulose, lignin and pectin present in the fibres.

Reference Books:

1. V. A. Shenai, Technology of Textile Processing Volume 1: Textile Fibres, Third Edition revised Sevak Publication, Mumbai (1991)
2. V. R. Gowariker, Polymer Science, New Age International Publishers; Third edition, ISBN: 9387788644, (1 January 2019).
3. J. Gordon Cook, Handbook of Textile Fibres. Volume 1 Natural Fibres, Woodhead Publishing Series in Textiles ISBN:978-1-85573-484-5 (1984).
4. J. Gordon Cook, Handbook of Textile Fibres. Volume 2 Man-Made Fibres, Woodhead Publishing Series in Textiles, ISBN: 978-1-85573-485-2 (1984).
5. Murthy, H. V. Sreenivasa, Introduction to Textile Fibres, Woodhead Publishing India in Textiles, ISBN:978-93-85059-57-5 (1984).
6. S.P. Mishra, A Textbook of Fibre Science and Technology, New Age International (P.) Limited, ISBN: 81-224-1250-5 (2000).
7. S. P. Mishra, Science and Technology of Man-Made Fibres, Suraj Publications., ISBN:
8. R. R. Franck, Bast and other plant fibres, Woodhead Publication Ltd, England, ISBN: 1-85573-684-5 (2005).
9. W. S. Simpson and G. H. Crawshaw, Wool, Science and Technology, Woodhead Publication Ltd, England, ISBN: 1 85573 574 1 (2002)
10. M. L. Gulrajani, Silk Dyeing, Printing and Finishing, Dept. of Textile Technology, Indian Institute of Technology, Hauz Khas, New Delhi, 1988.

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester –II)
01TCP168: Basic Computer Programming Lab

Teaching Scheme:
 Practical: 2 Hrs/Week

Credits
 1

Evaluation Scheme:
 CIE: 50 Marks

Course Objectives:

1. To describe basic Computer architecture and generation of computer.
2. To explain advanced features of MS Office application
3. To illustrate scripting language and programming
4. To explain basic structure of 'C' programming formation and implementation

Course Outcomes:

At the end of the course, students will be able to

1. Understand basic of computer architecture and generation of computer.
2. Creating professional-quality documents using MS Office.
3. Design and implement web pages using scripting language.
4. Understand programming concept and develop simple application programs in 'C' programming language.

List of Experiments

1. Create a document in MS Word to study different ribbon tag.
2. Create spreadsheet application to manipulate numbers, formula, analysis and graphs in MS Office
3. Create a Power Point presentation application using Text, Image, Animation using MS Office
4. Study of basic formulation tag of HTML
5. Create a simple web page using List, Image, Hyperlink and Frame in HTML
6. Create a simple personal web page using HTML
7. Program for Addition, Subtraction, Multiplication, Division of two numbers using 'C' Language
8. Program for decision making statement –Nested if- Else and switch statement in 'C' Language
9. Program for different types of loops using 'C' Language
10. Program for one-dimensional array using 'C' Language
11. Program for two-dimensional array using 'C' Language
12. Program for graphics design using 'C' Language

Reference Books:

1. Fundamentals of Computers by V. Rajaram, PHI Publications.
2. HTML for beginners by Firuza Aibara
3. Let us C by Y.P. Kanetkar, BPB Publication
4. <https://support.microsoft.com/en-us/training>.

Supplementary Readings:

web links, journal articles, conference proceedings book chapters etc.

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Chemistry) (Semester- II)
01TCI170: Democracy, Election and Good Governance (Audit)

Evaluation Scheme:
CIE: 50 Marks

Course Objectives:

1. By studying on their own, students will try to understand importance of democracy, election to local self-government bodies and good governance.

Course Outcomes:

At the end of the course, students will be able to

1. Answer questions related to democracy, election to local self-government bodies and good governance.

Course Contents

Unit I

Democracy in India

- Dimensions of Democracy: Social, Economic and Political
- Decentralization: Grassroots Level Democracy
- Challenges before Democracy: women and marginalized sections of the society

Unit II

Election to Local Self Government Bodies

- 73rd and 74th Constitutional Amendment Acts: Institutions at the local level and Role of State Election commission
- Local Body Elections: Urban & Rural
- Duties of an Individual towards electoral process

Unit III

Good Governance

- Meaning and concept
- Government and Governance
- Good Governance initiatives in India

*** Students have to pass this subject by studying on their own & by securing minimum 20 marks out of 50, passing of this course is compulsory.**