

**DKTE Society's
TEXTILE & ENGINEERING INSTITUTE
Rajwada, Ichalkaranji 416115
(An Autonomous Institute)**

DEPARTMENT: TEXTILES

**CURRICULUM
B. Tech. Textile Plant Engineering Program**

Final Year
With Effect From
2023 - 2024



Promoting Excellence in Teaching
Learning & Research

**Final Year B. Tech Textile Plant Engineering
Semester-I**

Sr. No.	Course Code	Course Title	Course Category	Teaching scheme				Course Credits
				L	T	P	Contact Hrs/wk	
1	TPL441	Textile Mill Planning and Organization	HSMC	3			3	3
2	TPL442	Theory of Textile Machines - II	PCC	3			3	3
3	TPL443	Design of Textile Machines - II	PCC	3			3	3
4	TPLOE2	Departmental Open Elective	OEC	3			3	3
5	TPLEL1	Elective - I	PEC	3			3	3
6	TPP452	Textile Mill Planning and Organization	HSMC		1		1	1
7	TPP453	Theory of Textile Machines - II Lab	PCC			2	2	1
8	TPD454	Project Phase - I	PST		4		4	4
9	TPP455	Design of Textile Machines - II Lab	PCC			2	2	1
		Total		15	5	4	24	22

Course Category	List of Departmental Open Electives
HSMC - Hum. & Social Sc., Mgt	TTL444 – Non woven Technology
BSC - Basic Science	TML445 - High Performance Fibers
ESC - Engineering Science	TCL447 - Functional Finishes
PCC - Prof. Core Courses	TFL448 - Retail Management
PEC - Prof. Elect. Courses	List of Electives
OEC- Open Elct. Courses	TPL449 - Textile Air Engineering
MC - Mandatory Courses	TPL450 – Process Control in Spinning
PST - Project / Seminar / Ind. Training	TPL451 – Condition Based Monitoring Techniques

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPL441: TEXTILE MILL PLANNING AND ORGANISATION		
Teaching Scheme: Lectures: 03 Hrs/Week	Credits 03	Evaluation Scheme: MSE: 25 Marks ISE: 15 Marks SEE: 60 Marks
Course Objectives: <ol style="list-style-type: none"> To Explain Project Planning, Formulation of a Project Report for Spinning, Weaving, Knitting Units, Techno economics. To explain Plant & Machinery Layout, Machinery Specification Selection & Civil/Building Construction approach. To calculate number of Machines essential in each textile process for targeted production quantity. To explain Materials Handling concept and method, Labour Complement. 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> Understand the project report preparation for textile activity. Understand layout preparation process, machine specifications and construction concept. Calculate spin plan and weave plan. Understand material handling equipment's used in textile industry and labour complement details. 		
Course Contents		
Unit I	Project Planning	06 Hours
Introduction, Capital investment required for project, Phases of Capital Budgeting, Difficulties in Capital expenditure, Phases involved. Formulation of a Project Report for Spinning, Weaving, Knitting Units - Assumptions, Machinery Organizations, Requirement of Miscellaneous Fixed Assets. Machinery Stores, Spares and in process inventories. Machinery erection, commissioning. Need of modernization and automation in Textile plants. Factors related to safety in Textile Plants.		
Unit II	Techno-economic Viability	06 Hours
Calculations of cost of project – Means of Finance – Estimates of sales & production – cost of production – working capital requirement – Profitability Projection – Break even point – Projected cash flow statements.		
Unit III	Site Selection	07 Hours
Selection of site for textile mills , General location, Actual selection of specific site, Calculation of spatial requirements, factors influencing site selection, Humidification considerations. Civil/Building Construction - Consideration in building design, size, shape and configuration of building. Architectural & structural aspects of textile mill building. Building morphology, General principles of building construction & building functions, Types of factory buildings, Types of building construction. Material for construction with special reference to walls, roofs, floors, false ceilings, fire resistance, sound proof, etc. Colour schemes for buildings, interior & machinery in textile mills. Cost considerations in building construction. Amenities		

required as per standards.		
Unit IV	Plant & Machinery Layout	06 Hours
<p>Significance and the concept, objectives and principles of layouts, kinds of layouts and their comparisons, flow pattern, work station design, tools and devices of making layouts, use of Auto-Cad for layouts, storage space requirements,</p> <p>Plant layout procedure, factors influencing layouts, selection of layout, effect of automation on plant layout, symptoms of bad layout. Layout aspects of spinning, weaving, knitting and composite mills. Spatial requirements of spinning / weaving / knitting machines .Modern trends material handling.</p>		
Unit V	Machinery Specification, Selection & Calculation for No. of Machines	07 Hours
<p>Selection of machines & machinery specifications - Required for the product in spinning, weaving, knitting etc. Calculation for number of machines in spinning /spin plan.</p> <p>Preparation of organization for ring spinning mill and preparatory - Departments based on ring spindle capacity and production of ring spun yarn. (Carded, Combed, Blended, folded). Assumptions for draft, waste, efficiency etc.</p> <p>Calculation for number of machines in weaving / weave plan - Preparation of organization for shuttle & shuttleless weaving mill and preparatory departments based on number of weaving machines & production of different cloths.</p> <p>Calculation regarding efficiency, waste, crimp, production rates, raw material and number of machinery required at different processes.</p>		
Unit VI	Materials Handling	06 Hours
<p>Definition and importance of materials handling, functions and principles of materials handling, material handling methods, engineering and economic factors, relationship to plant layout, selection and type of material handling equipments, study of different types of equipments used for materials handling in spinning, weaving, knitting mills. Latest trends in materials handling. Labour Complement - Types of labour required, labour complement, labour and staff required for spinning and weaving based on workload consideration. Job evaluation and merit rating.</p>		
References Books:		
<ol style="list-style-type: none"> 1. Management of Textile Industry – Dr. V. Dudeja 2. Textile Project Management by A. Ormerod, The Textile Institute Publication. 3. Industrial Organisation & Engg. Economics T.R. Banga & S.C. Sharma, Khanna Publishers, Delhi. 4. Norms for Process Parameters, Productivity etc. ATIRA, BTRA, SITRA, NITRA 5. USTER Statistics 6. Management of Textile Production, A. Ormerod. Newnes – Butter Wortrs Publication. 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPL442: THEORY OF TEXTILE MACHINES- II		
Teaching Scheme: Lectures: 03 Hrs /Week	Credits 03	Evaluation Scheme: MSE: 25Marks ISE: 15Marks SEE: 60Marks
Course Objectives:		
<ol style="list-style-type: none"> 1. To apply the theory, design, analysis and use of different types of gears and epicycle gears. 2. To describe theory, design and calculations based on the clutch and brakes. 3. To apply the concept of Static and Dynamic Balancing, Balancing of textile machine components, its uses. To describe about vibrations, its adverse and beneficial effects and applications from industry point of view. 4. To classify, explain construction, mounting, maintenance & applications of Antifriction and sliding bearings. To teach different types of drives used and its applications and power required for different textile machines 		
Course Outcomes:		
At the end of the course, students will be able to		
<ol style="list-style-type: none"> 1. To understand theory, design, analyse and use of different types of gears or epicycle gears. 2. To describe design and analysis process & decide applications of clutch and brakes. 3. To understand and explain static and dynamic balancing. Balancing of different machine components. To know machine vibration and its analysis & applications for textile industry. 4. To understand construction, classification, mounting, selection, maintenance & applications of drives, antifriction and sliding bearings. To know and control power consumption pattern required for different textile machines. 5. 		
Course Contents		
Unit I	Toothed and Epicyclic gearing	06 Hours
Toothed Gearing-		
Gear tooth terminology and geometry, Condition for constant velocity ratio, velocity of sliding of teeth, form of teeth. Effect of change in central distance on velocity ratio. Length of path of contact, arc of contact for involute teeth. Interference, minimum number of teeth on pinion for involute rack to avoid interference. Minimum number of teeth on gear to avoid interference.		
Epicyclic gearing -		
Gear trains, determination of velocity ratio and torque in epicyclic gear trains. Study of epicyclic gear trains used in speed frame, carding and comber		
Unit II	Balancing –	06 Hours
Static and Dynamic Balancing of rotary masses. Balancing machines. Balancing of textile machine components – carding cylinder, flyers and spindles of Ring frame		

Unit III	Brakes and Clutches-	06 Hours
Simple band brake, Band & block brake, shoe brake. Different types of clutches – plate & cone clutches. Application to textile machines.		
Unit IV	Vibrations –	06 Hours
Longitudinal, torsional vibrations, free and forced vibrations, natural frequency. Whirling of shaft, critical speed.		
Unit V	Antifriction and sliding bearings-	09 Hours
Construction, classification, mounting, maintenance & application to textile machines. Mathematical estimation of static and dynamic load, life of bearing, Selection of antifriction bearing.		
Unit VI	Drives and Power consumption of Machines	06 Hours
Power required for textile machines. Ring frame, speed frame, carding and looms. Different types of drives used in spinning. PIV, VPS, frequency-controlled drive and applications.		
References Books:		
<ol style="list-style-type: none"> 1. Theory of Machines by Rattan S.S. 2. Mechanical Vibrations by V.P. Singh, 3. Theory of Machines by V.P.Singh, 4. Theory of Machines by Ballaney, 5. Theory of Machines by R.S. Khurmi & J.K.Gupta 6. Mechanics of Spinning Machines by R. Rengaswamy. 7. Mechanics of Textile M/c. Part-I & II by Huntan & Slatter 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPL443: DESIGN OF TEXTILE MACHINES - II		
Teaching Scheme: Lectures: 03 Hrs/Week	Credits 03	Evaluation Scheme: MSE: 25 Marks ISE: 15 Marks SEE: 60 Marks
Course Objectives: <ol style="list-style-type: none"> 1. To get familiar with methods of design of mechanical components for various conditions of fluctuating loads. 2. To get familiar with design procedure of sliding & rolling contact bearings. 3. To know design procedure of Thin & Thick cylinders. To know design considerations of machine frames, concept of optimum design & various parameters for economical design. To get familiar with CAD & CAE. 4. To get familiar with design procedures of various types of gears. 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> 1. To design mechanical components subjected to various conditions of fluctuating loads by constructing S-N diagram, Soderberg & Modified Goodman diagram. 2. To explain construction, working, advantages & disadvantages of sliding & rolling contact bearings, designing the same. Select rolling bearing from manufacturer’s catalogue for a given application. 3. To design Thin & Thick cylinders. Plot/draw the stress pattern for the compound cylinder. Explain with sketches various types of end closures used for cylindrical pressure vessels & compare them. To explain design considerations of machine frames. To describe parameters for economical design, concept of optimum design & applications of solid modeling & analysis package. 4. To design various types of gears according to the applications. 		
Course Contents		
Unit I	Design against fluctuating load	08 Hours
Stress concentration, fluctuating stresses, fatigue failure, endurance limit, Notch sensitivity, Reversed stresses - design for finite and infinite life, Cumulative damage in fatigue, Soderberg & Goodman diagrams, Modified Goodman diagrams, fatigue design under combined stresses.		
Unit II	Design of Bearings	08 Hours
A) Design of Rolling Contact Bearings - Introduction, classification, basic terminology, selection from manufacturer’s catalogue, design for cyclic loads & speeds, bearing with a probability of survival other than 90%, mounting of bearing. B) Design of Sliding contact bearings – Hydrodynamic and Hydrostatic lubrication, Viscosity, Hydrostatic step bearing & energy losses in it, Raimondi & Boyd method, temperature rise, bearing design – selection of parameters, constructional details & materials etc.		

Unit III	Design of Pressure Vessels	07 Hours
Classification, design of thin & thick cylinders, spherical vessels, Autofrettage, Compound cylinder, End closures.		
Unit IV	Design of Spur & Helical Gears	05 Hours
<p>A) Design of Spur gears – force analysis in spur gears, gear tooth failures, material selection, beam strength & wear strength of gear tooth, gear design for maximum power transmitting capacity.</p> <p>B) Design of Helical gears – terminology, virtual number of teeth, force analysis, beam strength & wear strength.</p>		
Unit V	Design of Bevel Gear and Worm & worm wheel	05 Hours
<p>A) Design of Bevel gears – terminology, force analysis, beam strength & wear strength.</p> <p>B) Design of Worm & worm wheel – terminology and proportions of worm gears, force analysis, friction in worm gears, material selection, strength rating & wear rating of worm gears, Thermal considerations.</p>		
Unit VI	Design considerations of Machine Frames & Introduction to CAD	03 Hours
<p>A) Design considerations of Machine Frames – Design consideration of machine frames, bed, covers and bodies, design consideration for casting, forging & fabricated parts.</p> <p>B) Cost considerations in design - Standardization, Cost considerations in design from manufacturing requirement & from customer's requirement.</p> <p>C) Introduction to CAD & CAE – Introduction to solid modeling package & analysis package, concept of optimum design.</p>		
References Books:		
<ol style="list-style-type: none"> 1. Design of Machine Elements by V.B. Bhandari. 2. A Textbook of Machine Design by R.S. Khurmi & J. K. Gupta. 3. Design of Machine Elements by T. Krishna Rao Vol. I & II. 4. Machine Design by P. Kanniah. 5. Design of Machine Elements by Spotts 6. Mechanical System Design by R. B. Patil. 7. Machine Tool Design & Numerical Control by N. K. Mehta. 8. Machine Tool Design by Basu & Pal. 9. Mechanics of Spinning Machines – R. Rengaswamy. 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPLOE2-TTL444: NONWOVEN TECHNOLOGY		
Teaching Scheme: Lectures: 03 Hrs/Week	Credits 03	Evaluation Scheme: MSE: 25 Marks ISE: 15 Marks SEE: 60 Marks
Course Objectives: <ol style="list-style-type: none"> 1. To understand the concept of Nonwoven Textiles 2. To describe the stages of nonwoven fabric manufacturing 3. To illustrate the scope and merits of nonwovens in different applications 4. To analyze and identify the Nonwoven products 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> 1. Explain basic terms in nonwovens, classification and market potential of nonwoven 2. Describe web formation methods like dry laid and spun laid and its process parameter 3. Identify and describe various methods of web bonding and its process parameters 4. Identify the suitability of the nonwoven technology for various applications 		
Course Contents		
Unit I	Introduction of Nonwoven	04 Hours
Historical background of nonwovens, non-woven definition, stages in non-woven manufacturing. Web Forming Techniques: carding, air laid, wet process, polymer extrusion. Comparison.		
Unit II	Classification of Nonwoven	03 Hours
Classification of nonwoven – On the basis of use, on the basis of manufacturing process, on the basis of web formation, on the basis of bonding.		
Unit III	Web forming Techniques	09 Hours
Dry laid webs – fibre selection, fibre preparation, web formation, layering, Wet laid nonwoven – Raw materials, production process, special features of the wet laid process and its product. Spun bonded and Melt blown webs.		
Unit IV	Mechanical Bonding Techniques	10 Hours
Mechanically bonded webs – needle punched nonwovens, Application of needle punching, stitch bonded nonwovens, applications. Hydro entangled nonwovens – Bonding process, water system, filtration system, web drying, properties of spun laced webs, applications.		
Unit V	Thermal Bonding Technique	06 Hours
Thermally bonded nonwovens – binder, binding fibres, binding powder, binding webs, methods of thermal bonding – Hot calendaring, belt calendaring, oven bonding, ultrasonic bonding, radiant heat bonding. Applications.		

Unit VI	Chemical Bonding Technique	04 Hours
Chemically bonded nonwoven – Latex binder, other types of nonwoven binders, formulation, order of formulation, bonding technology. Application of chemical bonded nonwovens.		
References Books:		
<ol style="list-style-type: none"> 1. Non-Woven – Process, Structure, Properties and Applications, T. Karthik, Prabha Karan C & R. Rathinamoorthy, Woodhead Publishing India Pvt. Ltd., 2016. 2. Handbook of Nonwovens, 1st Edition By: S Russell, Woodhead Publishing 2007 3. Nonwoven Fabrics: Raw Materials, Manufacture, Applications, Characteristics, Testing Processes, Prof. Dr. Wilhelm Albrecht, Prof. Dr.-Ing. Hilmar Fuchs, Dr.-Ing. Walter Kittelmann, WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim, 2003 4. Nonwovens Technology Market & Product Potential, Proceedings of the Seminar IIT New Delhi, 2007 5. NPTEL Study material on Nonwoven Technology by Dipyan Das 6. Nonwovens: Monogram by BTRA 7. Nonwovens BY DR.P.K. Banerjee 8. Manual of Nonwovens by Krcma 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPLOE2-TML445: HIGH PERFORMANCE FIBERS		
Teaching Scheme: Lectures: 03 Hrs/Week	Credits 03	Evaluation Scheme: MSE 25 Marks ISE: 15 Marks SEE: 60 Marks
Course Objectives: <ol style="list-style-type: none"> 1. To describe the concept of high performance fibres 2. To explain the manufacturing process of commonly used high performance fibres 3. To explain structure and properties of commonly used high performance fibres 4. To explain the applications of high performance fibres 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> 1. Understand concept of high performance fibres 2. Understand manufacturing process of commonly used high performance fibres 3. Analyse structure and properties of commonly used high performance fibres 4. Apply high performance fibres for various products 		
Course Contents		
Unit I	Introduction to high performance fibres	06 Hours
<ul style="list-style-type: none"> • Concept and requirements of high performance fibres. Comparison of regular fibres with high performance fibres. 		
Unit II	Carbon Fibres	06 Hours
<ul style="list-style-type: none"> • Introduction to PAN and pitch based carbon fibres – their production, properties and applications. 		
Unit III	High molecular weight polyethylene fibres. & Fully aromatic polyester fibres	06 Hours
<ul style="list-style-type: none"> • Introduction, manufacture, fibre characteristics and applications of high molecular weight polyethylene fibres. • Fibre manufacture, properties and applications of fully aromatic polyester fibres 		
Unit IV	High temperature resistant fibres	06 Hours
<ul style="list-style-type: none"> • Manufacture, fibre characteristics and applications of PBI, PBO, and other high temperature resistant fibres 		
Unit V	Aramid Fibres	06 Hours
<ul style="list-style-type: none"> • Introduction, polymer preparation, spinning of fibres, structure and properties and applications of meta and para aramid fibres 		

Unit VI	Inorganic Fibres	06Hours
<ul style="list-style-type: none">• Glass fibre manufacture, Glass fibre composition, properties and applications• Types of ceramic fibres, their production, characteristics and applications•		
References Books:		
<ol style="list-style-type: none">1. High Performance Fibres, Edited by J. W. S. Hearle, Published by wood head publishing Ltd., England in association with Textile Institute Manchester2. Hand book of Fibres Science and Technology, High Technology Fibres, Edited by Manachem Lewin and Jack Preston.3. New fibers. T. Hongu and G. O. Phillips Ellis Horwood Ltd, Chichester4. Kevlar aramid fiber. By H.H. Yang. John Wiley and Sons, Chichester, New York,5. High-Performance and Specialty Fibers, Editors: Technology, Japan, Society of Fiber Science & (Ed.)		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPLOE2- TCL447: FUNCTIONAL FINISHES		
Teaching Scheme: Lectures: 03 Hrs/Week	Credits 03	Evaluation Scheme: MSE: 25 Marks ISE: 15 Marks SEE: 60 Marks
Course Objectives: <ol style="list-style-type: none"> 1. To describe the mechanism and chemistry of functional finishes. 2. To select the proper functional finish based on end use application. 3. To apply various functional finishes used for textiles finishing. 4. To evaluate the functional finishes applied on textiles. 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> 1. Describe the mechanism and chemistry of functional finishes. 2. Select the proper functional finish based on end use application. 3. Apply various functional finishes used for textiles finishing. 4. Evaluate the functional finishes applied on textiles. 		
Course Contents		
Unit I	Introduction to Functional Finishes	06 Hours
Objects, types of functional finishing, methods employed for the application of functional finishes on textile materials - irradiation of high energy, coating, insolubilisation or deposition, microencapsulation, polymerisation, cross-linking and resin treatment, covalent formation and ion-exchange/chelation.		
Unit II	Wrinkle Resistance Finish	09 Hours
Mechanism of creasing and resin finishing, Types of resin finishing, concept of Anticrease, wash-n-wear and Durable Press, Role of catalysts in resin finishing, Concept of deferred cure and post cure. Limitations of resin finishing causes of strength loss of resin finished fabric. Various approaches towards reducing the strength loss of resin finished goods. Low and ultra-low formaldehyde resins. Evaluation of Resin Finishing.		
Unit III	Antimicrobial Finish	07 Hours
Object, requirements, types of antimicrobial finishing. Mechanism of antimicrobial finishing, Desirable properties of a good antimicrobial finishes, various antimicrobial finishes for cotton, wool, silk. Mildew-proof and rot proof finishing, Evaluation of antimicrobial finishes.		
Unit IV	Flame Retardant Finish	07 Hours
Concept of flameproof and flame retardancy. Limiting oxygen Index and its importance, Thermal behaviour of textile fibres. Concept of solid phase and Gas phase flame retardant. Classification of flame-retardants. Mechanism of the mode of action of flame retardant. Factors affecting flame retardancy. Essential requirements of a good flame retardant. Evaluation of flame-retardant finish.		

Unit V	Repellent Finish	05 Hours
Introduction, Mechanisms of repellency, chemistry of repellency, Evaluation of textiles treated with repellent finishes		
Unit VI	Soil Release Finish	05 Hours
Type of soils, mechanism of soil impingement and soil retention. Mechanism of soil release. Soil release finishing of synthetics & its blends, Evaluation of soil release finishing.		
References Books:		
<ol style="list-style-type: none"> 1. Chemical Finishing of Textiles by W. D. Schindler and P. J. Hauser, Woodhead Publishing Ltd., Cambridge England, 1st Edition 2004, ISBN 1 85573 905 4 2. Functional Finishes for Textiles, Improving Comfort, Performance and Protection, Edited by Roshan Paul, Woodhead Publishing Series in Textiles: Number 156, 2015, ISBN 978-0-85709-839-9. 3. Chemistry & Technology of Fabric Preparation & Finishing, by Dr. Charles Tomasino, Department of Textile Engineering, Chemistry and Science College of Textiles, North Carolina State University, 1992. 4. Principles of Textile Finishing, by Asim Kumar Roy Choudhury, 2017 Elsevier Ltd., ISBN: 978-0-08-100646-7. 5. Textile Finishing, Edited by Derek Heywood, Published by the Society of Dyers and Colourists, UK, 2003, ISBN:9780901956811 6. Advances in Functional Finishing of Textiles, by Mohammad Shahid and Ravindra Adivarekar, Springer Nature Singapore Pte Ltd. 2020, https://doi.org/10.1007/978-981-15-3669-4 7. Textile Finishing-Recent Developments and Future Trends Edited by K.L. Mittal and Thomas Bahners, John Wiley & Sons, Inc., USA, 2017, ISBN 978-1-119-42676-9 8. Functional Textiles and Clothing, edited by Abhijit Majumdar, Deepti Gupta, Sanjay Gupta, Springer Nature Singapore Pte Ltd. 2019, ISBN 978-981-13-7720-4, https://doi.org/10.1007/978-981-13-7721-1 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPLOE2-TFL448: RETAIL MANAGEMENT		
Teaching Scheme: Lectures: 03 Hrs/Week	Credits 03	Evaluation Scheme: MSE: 25 Marks ISE: 15 Marks SEE: 60 Marks
Course Objectives: <ol style="list-style-type: none"> 1. To describe retail industry and the retailing environment. 2. To develop competence in Retail Planning, Implementation and Management. 3. To describe retail buyers and merchandisers, store operations, supply chain management. 4. To classify trends in fashion retailing. 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> 1. Describe retail industry and the retail environment. 2. Develop competency in retail planning, implementation and management. 3. Describe retail buyers and merchandisers, store operations, supply chain management. 4. Classify trends in fashion retailing. 		
Course Contents		
Unit I	Principles of retailing	06 Hours
The history of retail, Understanding the difference between retailing and the retailer, Classification of retailers, On-site vs. off-site retailing, Multichannel retail approaches.		
Unit II	Consumer buying behavior	06 Hours
Consumer behavior, Consumer demographics, Site selection and store location, Emerging domestic and international markets. Factors affecting consumer behaviour. Effect of consumer behaviour on marketing strategies.		
Unit III	Retail Corporate Offices	06 Hours
Corporate offices and their role, Strategic planning; Supporting store teams, Ethics and corporate, Social responsibility, HRM, Importance & Motivation, Issues associated with HRM. Customer Relationship Management: CRM defined, Process Collection and evaluation of customer data..		
Unit IV	Planning Merchandise assortment and pricing	06 Hours
Process, Buying plans, Assortment planning. Retail Pricing strategies: Setting Retail Prices, Price adjustments, Pricing Strategies & Services. Buying Systems: Process, Buying plans, Assortment planning OTB, preparation.		
Unit V	Store Management	06 Hours
Types and methods, Store management and the back of house, Employee management, Store logistics, Merchandise controls and loss prevention. Manpower, infrastructure in retail.		

Unit VI	Trends in Retailing	06 Hours
E-commerce and the online shopper, Mobile retail, pop-up, and concept shops, Retailer and designer collaborations, Technology in the retail sector.		
References Books:		
<ol style="list-style-type: none"> 1. Retailing Management by William, Davidson, Daniel J. Sweeney. John Wiley & Sons publication. ISBN: 978-0471850946 2. Retailing Management by Michael Levy, Barton Weitz and Dhruv Grewal 9th edition McGraw-Hill Education publication. ISBN: 978-0078028991 3. Fundamentals Of Retail Management by Arupghosh, Neha Publishers & Distributors, ISBN: 9789381422465 4. Retail Management by Gibson G. Vedamani, Jaico Publishing House. 4th edition ISBN: 978-8179921517 5. Retail Management by Chetanbajaj, RajnishTuli, NidhiVarma and Srivastava, Oxford publication. 2nd edition. ISBN: 978-0198061151 6. Retail Management by S.C. Bhatia Atlantic publication, ISBN: 9788126909827 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPLELI- TPL449: TEXTILE AIR ENGINEERING		
Teaching Scheme: Lectures: 03Hrs/Week	Credits 03	Evaluation Scheme: MSE: 25Marks ISE: 15Marks SEE: 60Marks
Course Objectives:		
<ol style="list-style-type: none"> 1. To understand basic terminology of air conditioning, psychrometric processes & application of the same in textile industry & interpret psychrometric chart. To get familiar with the procedure for solving the numerical based on psychrometric processes. To understand the function of refrigerants, its desirable properties and applications. 2. To get familiar with types of air refrigeration and simple vapour compression refrigeration system and factors affecting the same. To understand different equipment's used in refrigeration system. 3. To know principle and types of different air conditioning systems for human comfort & to provide ambient conditions in industry for facilitating production activities. 4. To understand principle, types and design of air distribution systems. To get familiar with ventilation and air changes required for various departments of textile mill, calculations of heat load, cooling coil capacity, humidifier capacity and heating coil capacity. To get acquainted with developments in humidification plants of textile industry. 		
Course Outcomes:		
At the end of the course, students will be able to		
<ol style="list-style-type: none"> 1. To explain the function of refrigerants and describe its desirable properties and applications. To describe psychrometric processes & solve the numericals based on it analytically as well as with the help of psychrometric chart. 2. To describe on air refrigeration system and simple vapour compression refrigeration system. To explain different equipment's used in refrigeration system. 3. To describe principle and types of different air conditioning systems which gives comfort to human body and provide ambient conditions in industry for facilitating production activities. 4. To design, analyze heat load, capacity of air distribution systems required for textile mill. To explain developments in humidification plants of textile industry. 		
Course Contents		
Unit I	Introduction	06 Hours
Introduction- Laws of thermodynamics applied to refrigeration. Introduction to basic terms – specific volume, density, specific weight, energy, internal energy, flow energy work, specific heat, sensible heat, latent heat, entropy, enthalpy, difference between gas and vapour, CoP, ton of refrigeration		
Unit II	Refrigeration & Refrigerants	06 Hours
A)Refrigeration- Air refrigeration system – Reversed Carnot cycle, Bell Coleman cycle, advantages, disadvantages of air refrigeration, simple vapour compression refrigeration system – T.S, H.S. and P-H diagrams, comparison with air compression system, coefficient of performance.		
B)Refrigerants- Introduction, classification, properties of an ideal refrigerant, secondary refrigerants,		

comparison of refrigerants – Air, NH ₃ , R-11, R-12, selection of refrigerant, environment friendly refrigerants.		
Unit III	RAC Equipments & Comfort	06 Hours
<p>A) RAC Equipments - working principle and applications of hermetically sealed compressor, condenser, evaporator, fans, blowers, air washers, filters, heaters, heat pumps, grills, registers, humidifiers and dehumidifiers used in textile A/C plant.</p> <p>B) Comfort - Factors affecting comfort, thermal exchange of human body with environment, heat disorders, comfort chart.</p>		
Unit IV	Psychrometry	06 Hours
<p>Psychrometry - Psychrometric terms, Dalton's law of partial pressure, psychrometric relations, psychrometric chart, psychrometric processes – sensible heating and cooling, humidification & dehumidification cooling with dehumidification, heating with humidification, humidification by steam injection, adiabatic chemical dehumidification, adiabatic mixing of air streams, bypass factor of heating and cooling coil, efficiency of heating and cooling coil, efficiency of humidifier, sensible heat factor, numericals based on above topics.</p>		
Unit V	Air conditioning & distribution systems	09 Hours
<p>A) Air conditioning systems - Summer air conditioning, winter air conditioning, modern year-round air conditioning, ambient conditions required in various departments of textile mill and controlling ambient conditions.</p> <p>B) Air distribution systems - Recirculated air, conditioned air, duct work, use of friction loss chart, rectangular equivalent of round duct, Duct systems, principle of duct sizing, different air distribution systems.</p>		
Unit VI	Design & Development of Air conditioning system	06 Hours
<p>A) Design of Air conditioning system - Design hints for practical design of air conditioning and humidification plant, ventilation and air changes required for various departments of textile mill, calculations of heat load, cooling coil capacity, humidifier capacity, heating coil capacity.</p> <p>B) Developments in Air conditioning system – Modern developments in humidification plants of textile industry.</p>		
References Books:		
<ol style="list-style-type: none"> 1. Refrigeration and Air conditioning by R. K. Rajput. 2. A Course in Refrigeration and Air-conditioning by Arora & Domkundwar. 3. Refrigeration and Air conditioning by R.S. Khurmi. 4. Refrigeration and Air conditioning by C.P. Arora. 5. Principles of Refrigeration by Roy J. Dossat. 6. Air conditioning in Textile mills by S.P. Patel (ATIRA). 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPLEL1-TPL450: PROCESS CONTROL IN SPINNING		
Teaching Scheme: Lectures: 03 Hrs/Week	Credits 03	Evaluation Scheme: MSE: 25 Marks ISE: 15 Marks SEE: 60 Marks
Course Objectives:		
<ol style="list-style-type: none"> 1. Explain the principals of process management, concepts of total quality management, the wastage and its effect on cost of production. 2. Explain the process of choosing process parameters and application of the chosen parameters at preparatory and ring spinning stages. 3. Illustrate the methodology of process and product performance evaluation and role of norms. 4. Describe the role of machine parameters and machine technology on process and product quality and cost. 		
Course Outcomes:		
At the end of the course, students will be able to		
<ol style="list-style-type: none"> 1. Understand the principles of process management and quality management. 2. Understand the role of machine technology and parameters on product quality. 3. Understand the process of choosing process parameters at preparatory and ring spinning stages. 4. Apply the chosen process parameters and assess the influence of parameters at different ring spinning process stages. 		
Course Contents		
Unit I	Introduction to Process Management and Quality Cost	06 Hours
<p>a) Introduction to process management – Meaning of process management, various phases of process management like planning, organizing, linking of customer feedback and process management, cycle of process management.</p> <p>b) The Cost of Quality – Definition, three views of quality costs, measuring quality costs, use of quality cost, accounting systems, and activity based costing.</p>		
Unit II	TQM, Customer Focus and Production Costing	06 Hours
<p>a) Total Quality Management (TQM) – Fundamental concepts of TQM, Elements of TQM, service quality versus product quality, Obstacles for implementation of TQM.</p> <p>b) Customer focus & satisfaction – Determinants of customer satisfaction and dissatisfaction, Customer perception of quality, Factors affecting the product quality, Customer relation & profitability, buyer supplier relationship, supplier partnership, continuous process improvement.</p> <p>c) Production Costing and Parameters influencing the production cost.</p>		
Unit III	Raw Material Management and Yarn Realization	07 Hours
<p>a) Raw material management – Importance, Effect and Factors affecting raw material management, Importance and factors affecting the cost of raw material, Bale management, Yarn engineering.</p> <p>b) Yarn Realization – Importance and factors affecting yarn realization, Estimation process, norms for various yarns like cotton, blended etc.</p>		

c) Process management in blow room & card – Blow room & card as integrated system, Factors deciding amount of waste during process, Neps & fibre rupture, contamination control, selection of proper blow room sequence and its parameters.

Unit IV	Process Management in Combing, Draw Frame and Speed Frame	05 Hours
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a) Process management at Comber preparatory & Combing - Significance & importance of good lap for comber, Factors deciding the comber performance, evaluation of comber performance, Fractionating efficiency of comber, comber waste analysis.

b) Process management at Draw frame – Drafting wave & its significance, Roller nip movement, Roller speed variation, Roller vibration, influence of parameters like speed, setting, Role of auto leveler, Role of material channelizing in spinning.

c) Process management at Speed frame – Influence of process parameters like flyer speed, twist, break draft and settings on roving quality. Reasons for high count C.V. in roving and its control at speed frame.

Unit V	Process Management in Ring Frame and End Breaks	05 Hours
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a) Process management in Ring Spinning – Influence of various machine and material parameters on yarn quality. Control of yarn count and strength, Within and Between bobbin variation, Control of yarn evenness and imperfections, Types of yarn irregularities, measurement causes and assessment. Control of yarn Hairiness- factors affecting.

b) End breaks in spinning – Importance and controls.

Unit VI	Yarn Faults, On and Off Line Monitoring and Productivity	05 Hours
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a) Control of Yarn and package faults – Effect of machine parameters on classmate faults, control of faults. Study and control of yarn faults.

b) Role of on & off line monitoring and centralized data collection systems in spinning process.

c) Productivity – Importance, Productivity indices, Reasons for shortfall in productivity, Means to improve productivity.

References Books:

1. Textile Quality Physical method of Product & Process Control by Mairio BonaCOMMETT program of EEC.
2. Process Control in Spinning by A. R. Garde & T. R. Subramaniam, ATIRA Publication.SITRA publication.
3. Total Quality Management – A How to program for high performance business by John M. Kelly, Published by Aleycuder, Hamitton Institute Inc.
4. Process Control in Spinning – Dr. K. R. Salhotra, ATIRA Publications.
5. Process Management in Spinning by R. Senthil Kumar.

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPLEL1- TPL451: CONDITION BASED MONITORING TECHNIQUES		
Teaching Scheme: Lectures: 03Hrs/Week	Credits 03	EvaluationScheme: MSE: 25Marks ISE: 15Marks SEE: 60Marks
Course Objectives: <ol style="list-style-type: none"> 1. To explain working principles, types and usefulness of condition based monitoring, its comparison with conventional planned maintenance. 2. To describe details of NDT, Contaminant examination techniques used for monitoring and their applications. 3. Explanation to learn Dynamic Analysis, parameters related to machine vibrations. Methods of vibration measurement, its isolation, materials used to control machine vibration and noise. 4. Describe performance monitoring techniques used for mechanical conditions as well as such techniques in textile on line monitoring. 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> 1. Able to understand and explain principles, types and usefulness of condition based monitoring, its advantages over conventional planned maintenance. 2. Describe and select NDT, Contaminant examination techniques used for monitoring and their applications. 3. Describe Dynamic Analysis, parameters, related to machine vibrations. Methods of vibration monitoring, its isolation and materials used to control machine vibration and noise. 4. Use performance monitoring techniques and check mechanical condition as well as select right techniques for textile machines for on line monitoring. 		
Course Contents		
Unit I	Introduction to Condition Monitoring	04 Hours
Introduction to Condition Monitoring - Subjective & objective assessment, advantages of condition-based maintenance over preventive maintenance. Types of inspections in condition-based maintenance.		
Unit II	Non-destructive and Special purpose Inspection	11 Hours
Non Destructive Testing - Ultrasonic testing, Radiography, Thermography, eddy current testing, Magnetic particle test, Acoustic, emission testing, Temperature measurement, stroboscope, optical inspection techniques. Special Purpose Inspection Methods - Crack detection, leak detection, corrosion monitoring, Contaminant examination – magnetic plug test, SOAP, Particle count method.		
Unit III	Performance and Lubrication Monitoring	07 Hours
Performance Monitoring - Concept, On line monitoring techniques in Textile machine – Ring data system, Varioset, Classimat, Autolevellers at carding and drawframe, Uster spectrogram. Lubrication Monitoring - Objects, Methods, Laboratory tests & spot tests for oils & greases.		

Unit IV	Dynamic Analysis	08 Hours
Dynamic Analysis - Fundamentals of vibration & noise. Concept of Dynamic analysis, vibration measurement methods, applications. Case study of shock pulse monitoring of antifriction bearing, Machinery noise & analysis.		
Unit V	Transducers for Vibration and Noise Measurement	06 Hours
Study of transducers used for vibration and noise measurement – LVDT - Peizo crystal – inductive - condenser mic - peizo mic - electrets microphone, etc.		
Unit VI	Vibration and Noise Control	07 Hours
Methods of vibration and noise isolation - Fundamentals related to vibration and noise, their solution, free damped vibrations, vibrations with 6 degrees of freedom. Transmissibility, damping factor. Materials and methods used for isolation of noise.		
References Books:		
<ol style="list-style-type: none"> 1. Maintenance Management Vol. 12, IMME Pub. 2. Summer School on Maintenance Engineering – S.J.C.E. Mysore. 3. Measurement System – E.O. Doebelin, Mc Graw hill International Pub. 4. Theory & application of Digital Signal Processing – Ranbinder L.R. & Gold B. 5. Mechanical Measurements – Beckwith T.G. and Lewis Buck N. 6. Machinery Noise Measurement – S.J. Yang and A.J. Ellison, Oxford New York. 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPP452: TEXTILE MILL PLANNING AND ORGANISATION		
Teaching Scheme: Tutorial: 01 Hrs /Week	Credits 01	Evaluation Scheme: CIE: 50 Marks
THEME: The Tutorial conducted would be based on the syllabus for the present subject. It is preferably on data collection and techno economic interpretation.		

Submission – Completed Assignment.

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPP453: THEORY OF TEXTILE MACHINES - II LAB		
Teaching Scheme: Practical: 02 Hrs/Week	Credits 01	Evaluation Scheme: CIE: 50Marks SEE: 50Marks
List of Experiments		
1	Static balancing of rotary masses.	
2	Dynamic balancing of rotary masses.	
3	Generation of Involute gear tooth profile.	
4	Study of Epicyclic gearing on speed frame / carding / comber / Rapiet machine.	
5	Study of Brakes	
6	Study of clutches	
7	Calculation of natural frequency of single degree of freedom vibration	
8	Study of forced vibration characteristics.	
9	Study of whirling of shaft.	
10	Assembly & Dismantling of bearing of spinning / weaving machine.	
11	Study of PIV & VPS, frequency control drive.	
12	Study of power consumption of a loom or any spinning machine.	

Submission – – Minimum five experiments based on above

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPD454: PROJECT PHASE- I		
Teaching Scheme: Tutorial: 04 Hrs/Week	Credits 04	Evaluation Scheme: CIE: 50 Marks
Course Objectives:		
<ol style="list-style-type: none"> 1. To assist the students in identifying problem, searching relevant literature. 2. To guide the students in preparation of plan of work. 3. To encourage, promote and assist the students at various stages. 4. To encourage them to work in group. 		
Course Outcomes:		
At the end of the course, students will be able to		
<ol style="list-style-type: none"> 1. Identify problem, Prepare Literature Review, Prepare and submit Plan of work 2. Timely submit Literature Review based on problem identified and plan of work. 3. Make availability and testing of raw materials, designing of product, initial trials, etc. 4. Work in team 		
Course Contents		
Selection of Topic and Registration		
Students based on their interest and availability of resources select the topic in one of the following area-		
i. Process optimization.	ii. Product Development.	
iii. Fabrication.	iv. Software in textiles.	
Students should submit the registration form to dissertation committee filling all the details.		
Literature review		
Literature related to topic selected should be searched from Reputed Research Journals, Books, and internet. Literature review should be prepared as per the standard format.		
Plan of work		
Proposed plan of work in consultation with guide should be prepared. Plan of work consists of		
<input type="checkbox"/> Raw Material details.	<input type="checkbox"/> Methodology to be adopted.	
<input type="checkbox"/> Testing to be carried out.		
Submission of Literature review and plan of work		
Spiral bound copy of Introduction, Literature review and plan of work as per the standard format should be submitted to dissertation committee.		
Evaluation of Plan of work		
Students should present all above details of project work in front of project evaluation committee. If any recommendations are suggested by committee, those should be implemented and resubmitted.		
Continuous Internal Evaluation (CIE)		
Term work marks are allotted by continuous monitoring of the progress in the work and submission of spiral bound copy.		

Submission

1. Spiral copy of Introduction, literature review and plan of work, duly signed by all team members and Guide.

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VII) TPP455: DESIGN OF TEXTILE MACHINES - II LAB		
Teaching Scheme: Practical: 02 Hrs /Week	Credits 01	Evaluation Scheme: CIE: 50 Marks SEE: 50 Marks
List of Assignments		
1	Design against Fluctuating load.	
2	Design of Rolling Contact Bearings.	
3	Design of Sliding Contact Bearings.	
4	Design considerations of Machine Frames & Introduction to CAD.	
5	Design of Pressure vessels.	
6	Design of Gears.	

Submission – Completed Journal & drawing sheets.

**Final Year B. Tech Textile Plant Engineering
Semester-II**

Sr. No.	Course Code	Course Title	Course Category	Teaching scheme				Course Credits
				L	T	P	Contact Hrs/wk	
1	TPL461	Maintenance of Textile Machines	PCC	4	-	-	4	4
2	TPL462	Fluid Flow Systems and Controls	PCC	3	-	-	3	3
3	TPLEL2	Elective - II	PEC	3	-	-	3	3
4	TPLEL3	Elective - III	PEC	3	-	-	3	3
5	TPD469	Project Phase - II	PST	-	5	-	5	5
6	TPD470	Internship - II *	PST	-	-	-	-	3
7	TPP471	Maintenance of Textile Machines Lab	PCC	-	-	2	2	1
8	TPP472	Fluid Flow Systems and Controls Lab	PCC	-	-	2	2	1
		Total		13	5	4	22	23

Course Category	List of Electives - TPLEL2
HSMC - Hum. & Social Sc., Mgt	TPL463 – Instrumentation and Metrology
BSC - Basic Science	TPL464 - Manufacturing of Specialty Fabrics
ESC - Engineering Science	TPL465 - Sustainable Textiles
PCC - Prof. Core Courses	
PEC - Prof. Elect. Courses	List of Electives - TPLEL3
OEC- Open Elct. Courses	TPL466 – Mechatronics
MC - Mandatory Courses	TPL467 – Maintenance Management
PST - Project / Seminar / Ind. Training	TPL468 – Process Control in Weaving

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VIII) TPL461: MAINTENANCE OF TEXTILE MACHINES		
Teaching Scheme: Lectures: 04 Hrs/Week	Credits 04	Evaluation Scheme: MSE: 25Marks ISE: 15Marks SEE: 60Marks
Course Objectives: <ol style="list-style-type: none"> To teach need of maintenance, its functions, types & scheduling. To elaborate maintenance practices in Spinning preparatory & Spinning processes. To describe maintenance practices in Weaving preparatory & Weaving processes. To explain concepts and procedure of maintenance audit, SQC synchronization & recording of maintenance activities. 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> understand and explain need of maintenance, its functions, types & scheduling. explain & use maintenance practices in Spinning preparatory & Spinning processes. explain & use maintenance practices in Weaving preparatory & Weaving processes. explain concepts of maintenance audit, SQC synchronization & recording of maintenance activities. 		
Course Contents		
Unit I	Introduction of Maintenance	09 Hours
<ol style="list-style-type: none"> Maintenance – concept, importance, objectives of maintenance, Breakdown & planned maintenance sub classification of planned maintenance, Procedure for planning, schedules for preventive maintenance. Maintenance of spinning preparatory machines - schedules, staff, precautions & methods to be followed during maintenance activities, tools & gauges used for maintenance. 		
Unit II	Maintenance of Spinning Machines	09 Hours
<ol style="list-style-type: none"> Maintenance of Ringframe & Compact Spinning Mechanisms - schedules, staff, precautions & methods to be followed, Tools & gauges used, Maintenance of Rotor Spinning Machines – Schedules, Precautions, Methods etc. Study of aprons & cots used in spinning & their maintenance. 		
Unit III	Machine audit	06Hours
<ol style="list-style-type: none"> Machine audit – concept and auditing of spinning machines. Energy conservation in spinning SQC synchronization with maintenance – SQC activities useful for maintenance in various departments of spinning. 		
Unit IV	Maintenance of weaving machines	13 Hours
<ol style="list-style-type: none"> Maintenance of weaving preparatory machines, schedules, critical points of maintenance, precautions to be taken during maintenance operations for Winding, Warping, & Sizing machines. Maintenance of plain & automatic loom - Schedules, critical points, precautions, mechanism 		

wise auditing of plain & automatic looms.		
Unit V	Maintenance of shuttleless weaving machines	07Hours
a) Approach towards maintenance of latest weaving machines, Critical maintenance points of various shuttleless weaving machines like projectile, rapier, & air jet weaving.		
Unit VI	Recording of maintenance	04 Hours
a) Recording of maintenance activities & its importance. b) Introduction to logic & approach of maintenance of chemical processing machines.		
References Books:		
1. Maintenance manuals by BTRA for various spinning & weaving machines.		
2. BTRA monograph series.		
3. Spinning machinery maintenance by SITRA		
4. Maintenance manuals of different machinery manufacturers of spinning & weaving machines.		
5. Modern approach to maintenance in spinning, Woodhead publication.		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VIII) TPL462: FLUID FLOW SYSTEMS AND CONTROLS		
Teaching Scheme: Lectures: 03Hrs/Week	Credits 03	Evaluation Scheme: MSE: 25Marks ISE: 15Marks SEE: 60Marks
Course Objectives:		
<ol style="list-style-type: none"> 1. To discuss need of Hydraulic & pneumatic systems, their types, merits & demerits & ISO symbols. 2. To study & learn elements of fluid systems like Air compressor, hydraulic power pack, filter, dryer etc. 3. To study & learn different types of valves, actuators & working of basic pneumatic & hydraulic circuits. 4. To learn concepts of maintenance, troubleshooting of pneumatic & hydraulic systems & piping required. 		
Course Outcomes:		
At the end of the course, students will be able to		
<ol style="list-style-type: none"> 1. Explain use of Hydraulic & pneumatic systems, their types, merits & demerits & will be able to draw ISO symbols. 2. Explain elements of fluid systems like Air compressor, hydraulic power pack, filter, dryer etc. 3. Explain use of different types of valves, actuators & working of basic pneumatic & hydraulic circuits. 4. Explain concepts of maintenance, troubleshooting of pneumatic & hydraulic systems & piping required. 		
Course Contents		
Unit I	Basics of hydraulics and pneumatics	07 Hours
a) Introduction to hydraulic and pneumatic systems, Areas of applications, relative merits and demerits, comparison of above systems with electrical, mechanical and hybrid systems. b) ISO / JIC symbols used in pneumatics and Hydraulics and properties of compressed air for pneumatic systems, advantages of compressed air.		
Unit II	Elements in hydraulics and pneumatics & control valves	10 Hours
a) Fluid conditioning elements – filter, lubricator, dryers, heat exchangers, pressure regulators and strainers used in hydraulics and pneumatics. b) Study of control valves in pneumatics and hydraulics –Pressure control, Direction control, flow control valves & special valves.		
Unit III	Study of Air compressors & Actuators	08 Hours
a) Air compressors – Reciprocating compressor and its Numerical treatment. Equations for work done, clearance volume, multi staging, intercooler, after cooler, b) Study of actuators – Linear and rotary actuators in pneumatics and hydraulics.		

Unit IV	Study of Pneumatic circuits	5 Hours
<p>a) Pneumatic circuits and applications – Basic Pneumatic Circuits - Speed control, sequencing, time delay, actuation of pneumatic motor.</p> <p>b) Maintenance and trouble shooting in pneumatic and hydraulic system</p>		
Unit V	Hydraulic Systems & Pumps	05Hours
<p>a) Hydraulic Systems – Introduction in brief, properties of fluid, types and selection of fluids.</p> <p>b) Study of pumps used in hydraulic system and hydraulic power pack.</p>		
Unit VI	Hydraulic circuits and applications	04 Hours
<p>a) Hydraulic circuits and applications – Basic hydraulic circuit - Speed control, sequencing, counter balancing, study of systems in Textile machines.</p> <p>b) Pipes and Fitting, accumulator, Pressure intensifiers.</p>		
References Books:		
1. Pneumatics and Hydraulics – Harry L. Stewart.		
2. Hydraulics & Pneumatics – Andrew Parr		
3. Pneumatic systems (Principles & Maintenance) – S. R. Majumdar.		
4. Oil Hydraulics – S. R. Majumdar.		
5. Industrial Hydraulics – John Pippenger& Tyler Hicks.		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VIII) TPLEL2-TPL463: INSTRUMENTATION AND METROLOGY		
Teaching Scheme: Lectures: 03Hrs/Week	Credits 03	Evaluation Scheme: MSE: 25Marks ISE: 15Marks SEE: 60Marks
Course Objectives:		
<ol style="list-style-type: none"> 1. To understand the Need of measurement, Methods of Measurement, Study of different Instruments which require for measurement of line and angle dimensions. 2. To understand about surface finish, Straightness & Flatness, External Threads its measurement methods with the help of different instruments. 3. To understand about types of Comparators Interferometry, its applications in different industry. Students should be able to understand about Limit, Fits, Tolerances, its necessity in any industry. 4. To understand different types of Instruments and gauges used in spinning and weaving department, its applications. 		
Course Outcomes:		
At the end of the course, students will be able to		
<ol style="list-style-type: none"> 1. Explain need, methods of measurement and different types used for angle and line measurement. 2. Explain about surface finish, Straightness & Flatness, External Threads its measurement methods. 3. Explain different types of comparators, Interferometry, its application in different industry. To explain Limit, Fits, Tolerances, its necessity in any industry 4. Explain different Instruments and gauges used in spinning and weaving department, its applications. 		
Course Contents		
Unit I		06 Hours
Measurement-		
Introduction, Need of measurement, Methods of Measurement, International standards of Measurement – a) Line standards b) End standards c) Wavelength standards, System of measurement. Accuracy & precision of measurement.		
Unit II		06 Hours
a) Linear measurement : Vernier Calliper, Micrometer, Height gauge, Depth gauge, Slip gauges, Grades of Slip gauges, application, Universal measuring machine.		
b) Angle measurement: Measurement of angle by using instruments like Bevel protractors, Clinometer, Angle dekkor. Angle gauges, Auto collimator, case studies of measurement of an unknown angle by using Sine bar, Standard balls & Rollers etc.		
Unit III		06 Hours
Surface finish: Roughness, Wavyness, lay, methods of measuring roughness, Ra value, RMS value, CLA value, Ten point height method, Instrument for measuring surface Texture, Profilometer		
b) Straightness & Flatness: Inspection of straightness & Flatness by using instruments straight edge, spirit		

level, Autocollimator, Beam comparator, Tests to check squareness, parallelism of the axes.		
Unit IV		06 Hours
Interferometry: Principles, optical flat, Typical applications of optical flat.		
Unit V		09 Hours
Comparators : Study of Mechanical, Electrical, Electronic, Pneumatic, Optical comparators.		
Limit, Fits, Tolerances: - Introduction to limit, fits, allowances, Tolerances, Unilateral, bilateral tolerances, Interchangeability, types of fits, Systems of fits, Introduction to limit gauges, GO-NOGO gauges. Taylor's Principle.		
Unit VI		06 Hours
Study of Instruments and gauges used in spinning and weaving:- Prism calliper, stroboscope, spring balance, tachometer, frame level, pressure gauge, saddle gauge, gauges used in looms like Simco, Ruti-C, Airjet etc.		
References Books:		
<ol style="list-style-type: none"> 1. Engineering Metrology – I.C. Gupta 2. Engineering Metrology – R.K. Jain 3. Practical Engineering Metrology – Sharp K.W.B. Pitman, London 4. Metrology and quality control – M.S. Mahajan , B.S. chaudhari , vrinda pulications 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester- VIII) TPLEL2-TPL464: MANUFACTURING OF SPECIALITY FABRICS		
Teaching Scheme: Lectures: 03 Hrs/Week	Credits 03	Evaluation Scheme: MSE:25 Marks ISE:15 Marks SEE:60 Marks
Course Objectives: <ol style="list-style-type: none"> 1. To explain denim fabric and worsted fabric manufacturing 2. To explain home textile and carpet fabric manufacturing 3. To explain terry fabric, narrow fabric, tire cord and net fabrics 4. To explain various industrial fabrics manufacturing used for sports, automobile, canvas and coated fabrics 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> 1. Explain denim fabric and worsted fabric manufacturing 2. Explain Home textile and carpet fabric manufacturing 3. Explain terry fabric, narrow fabric, tire cord and net fabrics 4. Explain various industrial fabrics manufacturing used for sports, automobile, canvas and coated fabrics technology 		
Course Contents		
Unit I	Denim and Worsted fabrics	07 Hours
a) Denim Fabric - Introduction to denim, history of denim manufacturing, yarn properties required, spinning of yarn for denim fabric manufacturing, weaving preparatory, dyeing and sizing concept, weaving machine suitable for denim manufacturing, modifications required in weaving process, wet processing of denim, special treatments used b) Worsted Suiting Fabric - Yarn quality required, spinning of worsted yarn in brief, preparation and weaving of worsted yarns, weaving machines requirement and modifications. Wet processing and special treatments requirements		
Unit II	Home Textiles	07 Hours
a) Home Textiles - Definition, applications i) Bed sheet - required qualities, sizes of different bed sheets, woven and printed bed sheets manufacturing processes, quality parameters of yarn used, preparatory and weaving processes, weaving machine parameters and its selection, wet processes and finishing of bed sheets ii) Curtains - Curtains and blinds, Basic requirements, quality requirements, types of fabric with respect to woven and knitting, quality parameters of yarn used, preparatory and weaving processes, weaving machine parameters and its selection, wet processes and finishing of curtain fabric. Knitted curtain manufacturing b) Carpet Manufacturing - Introduction, applications, construction, types of piles – woven and non-woven, woven – Wilton, patterned, plain, cord, Brussels, Axminster, Production of carpet worldwide, embroidered carpet, Tufted, cut pile, loop pile, Nonwoven Carpets – bonded, electro statically flocked, needle punched. Carpet selection criteria, carpet care		

Unit III	Terry Towels and Narrow Fabric	07 Hours
<p>a) Terry Towel Fabric - Introduction, Basic requirements of towel fabric, types of towel fabric, importance of the terry towels, mechanisms of pile formation, terry towel parts, yarn quality requirements, process flow chart, preparatory and weaving of terry fabric, weaving machines specifications, wet processes and finishing of terry fabric, quality control in terry towel manufacturing</p> <p>b) Narrow Fabric - Definition, applications, properties required, specifications and manufacturing of flexible and rigid tapes, finishing processes involved</p>		
Unit IV	Sports and Net Fabric	05 Hours
<p>a) Sports Fabric - Applications of different fabrics in various sports, fabric specifications for different sportswear and sports accessories, woven and knitted sportswear, statistics of fabric consumption, leading brands available</p> <p>b) Net Fabric Manufacturing - definition, types of nets, yarn and fabric quality requirements for various applications, manufacturing processes.</p>		
Unit V	Automobile Textiles	07 Hours
<p>a) Automobile Fabric - Applications of different fabrics in automobile, fabric specifications for different applications in automobiles, woven and knitted automobile fabrics, statistics of automobile fabric consumption</p> <p>b) Tire cord fabric - Basic requirements of tire, importance of tire cord fabric, parts of tire cord, structure of tire cord, yarn quality requirement, preparation and weaving of tire cord fabric, fabric quality requirements, machines used and finishing of the fabric</p>		
Unit VI	Canvas and Coated Fabrics	06 Hours
<p>a) Canvas Fabric - Introduction, applications, yarn quality requirements, preparation and weaving machine modifications for canvas fabric preparation, wet process sequence and modifications</p> <p>b) Coated and Laminated Fabric - Importance of coating, definitions, applications, coating machines, special polymers for coating of different applications, methods of coating rain wears manufacturing, yarn and fabric quality requirements for rainwear</p>		
<p>References Books:</p>		
<ol style="list-style-type: none"> 1. Hand book of weaving by Sabit Adanur 2. Advances in knitting technology, Edited by K. F. Au 3. Handbook of Technical Textiles by A.R. Horrocks & S C Anand 4. Textiles in Automotive Engineering by W. Fung & M. Hardcastle. 5. Coated Textiles Principles and Applications by Dr. A. K. Sen 6. www.technicaltextiles.net 7. Textile advances in the automotive Industry by R. Shishoo 8. Automotive textiles by Textile progress Vol. 29 by S. K. Mukhopadhyay. 9. Performance of Home Textiles, 1st Edition, Subrata Das 10. Woven Fabric Structure: Design and Product Planning, J. Hayavadana 11. Wellington Sears Handbook of Industrial Textiles by Sabit Adanur. 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VIII) TPLEL2-TPL465: SUSTAINABLE TEXTILES		
Teaching Scheme: Lectures: 03 Hrs/Week	Credits 03	Evaluation Scheme: MSE 25 Marks ISE: 15 Marks SEE: 60 Marks
Course Objectives: <ol style="list-style-type: none"> 1. To explain the concept, benefits and importance of sustainability in textile manufacturing 2. To explain key issues and compliances related to sustainability in textile industry 3. To explain sustainable textile products and processes 4. To explain sustainable practices in textile manufacturing 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> 1. Understand the concept, benefits and importance of sustainability 2. Identify key issues and compliances related to sustainability in textile industry 3. Analyze sustainable textile products and processes 4. Apply sustainable practices in textile manufacturing 		
Course Contents		
Unit I	Introduction to sustainability	06 Hours
Concept of Sustainability. Benefits of Sustainability. Challenges and opportunities in sustainable textile production, Pillars of sustainability - environment, society, and economy. Life Cycle Analysis, Circular Economy		
Unit II	Sustainability issues and compliances	06 Hours
Sustainability issues with use phase of fabrics and garments. Innovations to reduce the impact of use phase. Compliance, certification, social accountability and ethical practices.		
Unit III	Sustainable raw materials	06 Hours
Sustainable raw materials for textiles: Natural fibres, manmade fibres. Renewable Products for the Textile Industry		
Unit IV	Sustainable Textile Processes	06 Hours
Green Processing technologies. Sustainability issues in current textile production, Sustainable processing,		
Unit V	Sustainability innovation in production	06 Hours
Technology based innovation, Innovation driven by legislation, Best practices in textile product manufacturing-spinning, weaving and chemical processing		

Unit VI	Reuse, Recycle and zero waste:	06Hours
Textile waste, textile waste management strategies, reuse, repair and reconditioning of products, recycling,		
References Books:		
<ol style="list-style-type: none"> 1. Sustainable Fashion and Textiles: Design Journeys by Kate Fletcher Published by Routledge; 1st edition, ISBN: 9781844074631 2. Textiles and Clothing Sustainability: Implications in Textiles and Fashion by Subramanian Senthilkannan Muthu (Editor) ISBN: 9789811021817 3. Sustainable Fibres and Textiles, Edited by Subramanian Senthilkannan Muthu, Woodhead Publishing Ltd. UK, Elsevier, 2017, ISBN: 978-0-08-102041-8 4. Biodegradable and sustainable fibres, edited by R. S. Blackburn, Woodhead Publishing Limited, USA, 2005, ISBN-13: 978-1-85573-916-1 5. Handbook of Sustainable Apparel Production by Subramanian Senthilkannan Muthu (Editor), ISBN: 9781482299373 6. Textiles and Clothing Sustainability- Sustainable Technologies, edited by Subramanian Senthilkannan Muthu, Springer Nature Singapore Pte Ltd. 2017 ISBN 978-981-10-2473-3, DOI 10.1007/978-981-10-2474-0 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VIII) TPLEL3-TPL466: MECHATRONICS		
Teaching Scheme: Lectures: 03Hrs/Week	Credit 03	EvaluationScheme: MSE: 25Marks ISE: 15Marks SEE: 60Marks
Course Objectives: <ol style="list-style-type: none"> 1. To explain basic concepts, need and scope of mechatronic systems and robotics in modern textile machines. 2. To describe elements of mechatronic system- transducers, controllers and actuators & their types. 3. Explain design process of mechatronic system, modelling, programming, robotics and material handling. 4. To evaluate mechatronic systems used in textiles. 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> 1. Explain basic concepts, need and scope of mechatronic systems and robotics in modern textile machines. 2. Describe elements of mechatronic system- transducers, controllers and actuators & their types. 3. Explain design process of mechatronic system, modelling, programming, robotics and material handling. 4. Evaluate mechatronic systems used in textiles 		
Course Contents		
Unit I	Introduction	05 Hours
Multidisciplinary approach, scope, elements in mechatronics design, applications, control system and its types, proportional, integral, differential controller, analog & digital controller.		
Unit II	Sensors and Drives	08 Hours
Principles & types of transducers and sensors, Electrical motors, stepper motors, servo principle, Hydraulic and pneumatic actuators, variable frequency drives, relays and solenoids, selection criterion for drives.		
Unit III	PLC and MEMS	09Hours(5+4)
PLC- Basic concept, fundamentals, ladder diagram & its construction, PLC - block diagram, internal circuit of discrete type input and output terminals, interfacing of sensors & actuators, PLC scan cycle, basic PLC programming procedure MEMS- Introduction, materials, sensors, actuators, fabrication methods, application of MEMS - Accelerometer, humidity micro sensor		
Unit IV	Modelling	04 Hours
Basic concepts, spring, damper, mass/inertia element, equivalent elements in electrical, fluid and thermal systems, model of electrical motor.		

Unit V	Automation and Robotics	06Hours(2+4)
<p>Automation- need and types automation, factors affecting automation Robotics-Scope, anatomy, configuration, drives, types of robots, transmission systems, end effectors, applications, Methods of robot programming, limitations, capabilities, various commands in robot programming.</p>		
Unit VI	Design of Mechatronic System	07 Hours
<p>Design process, comparison of traditional and mechatronic design, some case studies piece counting, robotic walking machine. Auto feed and auto doffing, weft selector, yarn clearer systems in textile machines. Material Handling Applications – General consideration, task planning, pick & place, loading unloading, inspection and assembly etc.</p>		
References Books:		
<ol style="list-style-type: none"> 1. “Mechatronics” by N. P. Mahalik, Tata McGraw Hill. 2. Mechatronics by M. D. Singh & J. G. Joshi, Prentice Hall Publication. 3. “Introduction to Mechatronics” by David G. Aleiatore& Michael B. Histan, Tata McGraw Hill. 4. “Programmable Logic Controllers” by John W. Webb & Ronald A Reis, Prentice Hall India. 5. “Robotics” by K. S. Fu, R. C. Gonzalez, C. S. G. Lee, McGraw Hill. 6. “Robotics Technology & Flexible Automation” Satyarajan Deb, Tara McGraw Hill. 7. “Industrial Robotics” Mikell P Grover, Mitchell Weiss, Roger N. Nagel, Nicols G. Odrey, McGraw Hill. 8. “Textile Robotics & Automation” by M. G. Mahadevan, Abhishek Publication, Chandigad 9. “Electronic Controls in Textile Machines” NCUTE Training Programme January 2000 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VIII) TPLEL3-TPL467: MAINTENANCE MANAGEMENT		
Teaching Scheme: Lectures: 03Hrs/Week	Credits 03	Evaluation Scheme: MSE: 25Marks ISE: 15Marks SEE: 60Marks
Course Objectives:		
<ol style="list-style-type: none"> 1. To explain management concept applied to maintenance of machines, basic functions, methodology and application to planned maintenance, condition-based maintenance. 2. To describe management functions planning, scheduling, organizing, controlling, budgeting, record keeping related to machine maintenance. 3. Explainway to enumerate indices related to machine downtime, utilization, spare part managementand inventory. 4. To teach uses of value analysis, value engineering, machine replacement, modernization decisions to improve profitability of company using maintenance management. 		
Course Outcomes:		
At the end of the course, students will be able to		
<ol style="list-style-type: none"> 1. explain maintenance management, basic functions, methodology and application to planned maintenance, condition-based maintenance. 2. understand and describe management functions planning, scheduling, organizing, controlling, budgeting, record keeping related to machine maintenance. 3. calculate and use indices related to machine downtime, utilization, spare part managementand inventory control. 4. use of value analysis, value engineering, machine replacement, modernization decisions to improve profitability of company using maintenance management. 		
Course Contents		
Unit I	Introduction	05 Hours
Basic concept of maintenance management its role in profitability of company, planned maintenance and breakdown maintenance & economic aspects, subclasses of planned maintenance, Mechanism of planned maintenance optimum planned maintenance, Computer applications in maintenance management.		
Unit II	Condition based maintenance	07Hours(5+2)
Condition based maintenance – Importance, subjective & objective inspections, types of condition monitoring techniques, Detailed study of (NDT) non-destructive testing, performance evaluation, debris analysis, dynamic analysis.		
Equipment Replacement – Need for replacement, Selection of appropriate alternative of replacement.		
Unit III	Performance Evaluation and Inventory Control	08Hours(3+5)
Performance Evaluation of maintenance function – Control – Methods of control and use of various indices.		
Spare parts management – Importance & means of inventory control.		

Unit IV	Failure Analysis and Planning	08Hours(4+4)
<p>Failure Analysis – Classification of failures, method of failure analysis, use of trouble shooting charts & other techniques.</p> <p>Planning, scheduling, maintenance organization, performance evaluation of maintenance function, PERT, CPM and other techniques for planning.</p>		
Unit V	Value Analysis and Lubrication Management	06Hours(3+3)
<p>Value Analysis & value Engineering – concept and techniques of value analysis & value engineering</p> <p>Lubrication management – Importance, measures for economy in lubrication management.</p>		
Unit VI	Maintenance Budgeting	05 Hours
<p>Maintenance budgeting – Methods of budgeting, selective budgeting control, techno economics of maintenance.</p>		
References Books:		
<ol style="list-style-type: none"> 1. Maintenance Management volumes 1 to 21, by IMME Delhi. 2. Maintenance Management, SITRA Publication. 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester- VIII) TPLEL3-TPL468: PROCESS CONTROL IN WEAVING		
Teaching Scheme: Lectures: 03 Hrs/Week	Credits 03	Evaluation Scheme: MSE:25 Marks ISE:15 Marks SEE:60 Marks
Course Objectives: <ol style="list-style-type: none"> 1. To explain scope, approach and methodology of process management 2. To explain process management in weaving preparatory to optimize quality and improvement in efficiency after each process 3. To explain process management in weaving with respect to fabric productivity 4. To explain process management in weaving with respect to fabric quality 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> 1. Understand scope, approach and methodology of process management 2. Understand process management in weaving preparatory to optimize quality and improvement in efficiency after each process 3. Understand process management in weaving with respect to fabric production 4. Understand process management in weaving with respect to fabric quality 		
Course Contents		
Unit I	Introduction to process management	03 Hours
Object, scope and approach to achieve quality and productivity in fabric production, and Methodology adopted for the same (SQC, Direct Approach, and online monitoring).		
Unit II	Quality and production management in winding	07 Hours
Control of splice quality, Yarn clearing – Yarn fault classification, Yarn fault classification system, Assessment of clearing performance, Control of Unwinding and winding tension, Control of Package quality		
Unit III	Process management in warping	05 Hours
Characteristics of perfect beam and monitoring the beam quality. Machine parameters adjustment and machine condition maintenance for minimizing end breaks, Method of assessing productivity of warping machine & measures to improve the productivity.		
Unit IV	Process management in sizing	08 Hours
Deciding the size recipe according to material and count of yarn, Preparation of quality size pastes. Determination and achieving the correct size pick up by controlling various sizing conditions, Stretch and moisture level control, Characteristics of perfect sized beam and its achievement. Method to increase weavability, Control of productivity.		

Unit V	Process management in weaving for productivity	07 Hours
Control of Technical, Human and organizational factors affecting loom shed efficiency. Assessment of loom performance after corrective actions. Control of down time through SMED technique, Use of snap study in controlling efficiency losses, MIS to control productivity		
Unit VI	Process management in weaving for quality	06 Hours
Causes and remedies for fabric defects. Manual and automatic fabric inspection methods, various point grading systems		
References Books:		
<ol style="list-style-type: none"> 1. Process Control in Weaving by M.C. Paliwal & P.D. Kimothi 2. Weaving: Technology and Operations by Allan Ormerod. 3. Weaving Machine, Mechanisms, Management by Dr. Talukdar, Ajagaonkar, Sriramulu. 4. Machine Manuals of Various Shuttle less Looms and – Preparatory Machines 5. Shuttle less Weaving: NCUTE Publication. 6. Fundamentals of Yarn Winding by Milind Koranne 		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VIII) TPD469: PROJECT PHASE-II		
Teaching Scheme: Tutorial: 05 Hrs/Week	Credits 05	Evaluation Scheme: CIE: 50 Marks SEE: 50 Marks
Course Objectives:		
<ol style="list-style-type: none"> 1. To guide the students in their experiment work as per the plan of work. 2. To teach various tools of testing and analyze the test results. 3. To get the report prepared in the form of thesis as per the prescribed format. 4. To encourage them to work in group. 		
Course Outcomes:		
At the end of the course, students will be able to		
<ol style="list-style-type: none"> 1. Carry the experiment work as per the plan of work. 2. Use various tools of testing and analyze the test results. 3. Write the thesis as per the prescribed format. 4. Work in a group. 		
Course Contents		
Experimentation work		
Students should start their experimental work as per the approved plan of work in consultation with Guide.		
Progress Evaluation		
Dissertation committee evaluates the progress in project and confirm the work as per the approved plan of work.as per the standard format.		
Report Writing		
After completion of work, students should prepare the report as per the standard format and guidelines in consultation with guide.		
Submission of Final Report		
Two bound copies of the report duly signed by Project Guide, Head of The Department and Principal along with a soft copy in the form of a CD should be submitted to Dissertation committee.		
Continuous Internal Evaluation (CIE)		
Term work marks will be allotted by continuous monitoring of the progress in the work and submission of final report.		
Semester End Evaluation (SEE)		
Students have to present their work in front of Internal and External examiner. Examiners assess the project work and allocate the marks.		

Submission

1. Two hard bound copies of final thesis duly signed by all the team members, Guide, HOD, and Director along with one soft copy.

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VIII) TPD470: INTERNSHIP-II		
Teaching Scheme: Training Period four weeks during Winter vacation	Credits 03	Evaluation Scheme: CIE: 50 Marks SEE: -- Marks Total: 50 Marks
Course Objectives: <ol style="list-style-type: none"> 1. To expose the students to the industrial practice, environment its work culture and industrial practices. 2. To expose the students to machineries, processes and modern tools used in industries. 3. To develop understanding of techniques like Production Planning, Quality Assurance, Maintenance practices, Environment and Pollution Control, Management Information System. 4. To provide hands-on training on machineries and equipments. 		
Course Outcomes: At the end of the course, students will be able to <ol style="list-style-type: none"> 1. Understand the industrial, environment, work culture and industrial practices. 2. Understand the machineries, processes and modern tools used in industries. 3. Reproduce the techniques like Production Planning, Quality Assurance, Students will be able to maintenance practices, Environment and Pollution Control, Management Information System. 4. Acquire skills and techniques to work in industries. 		
Course Contents		
Unit I	Training	
Training in Spinning, Weaving, Knitting, Machinery Manufacturing, Yarn, Fabric, Garment Chemical Processing, Machinery Manufacturing, Erection and Commissioning, Garment Manufacturing, Synthetics Fibre and Yarn Manufacturing, Technical Textiles, Non-Wovens, R & D Lab, Marketing etc. for study of: Process Flow Chart, Visit to various departments and study of machineries, Important adjustments and settings, Speed of Important Parts, Modern Developments in machines/process, Chemicals, Dyes used for carrying out various process, Process parameters and effect on quality of product, Actual Production and Efficiency, Production Planning and Control, Maintenance Practices, Maintenance tools and gauges, Maintenance schedule, Study of lubrications, Process Control and Quality Control activities, Roles and responsibilities of various categories of workers/technical staffs, Labour allocation, Lay-out of the unit.		
Unit II	Special Studies	
Management information systems, Waste study, Costing, Production planning and control, Target achievement, Information regarding humidification plant, Utility, Electrical supply, Store, purchase, Marketing, Sales, Samples, Lay-out of Plant.		

Unit III	Project	
Objectives, Procedures, Observations, Analysis and conclusion of the project carried out.		
References Books:		
Specific guideline points given in Daily Diary.		

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VIII) TPP471: MAINTENANCE OF TEXTILE MACHINES LAB		
Teaching Scheme: Practical: 02 Hrs/Week	Credits 01	Evaluation Scheme: CIE: 50Marks SEE: 50Marks
List of Experiments		
1	Auditing of carding machine and study of card room maintenance machines.	
2	Auditing of draw frame, classimat analysis and roller setting.	
3	Auditing of speed frame and spectrogram analysis.	
4	Auditing of Ring frame and its settings.	
5	Auditing of comber and its settings.	
6	Study of basic pneumatic circuits.	
7	Study of air circuits on ring frame G5/1, speed frame LF 1400 and Airjet weaving machine.	
8	Study of cots maintenance equipments.	
9	Auditing and setting of shedding and picking mechanisms of plain loom.	
10	Auditing and setting of pirn changing mechanism of autoloom.	
11	Auditing and setting of sulzer picking mechanism.	
12	Auditing and setting of sulzer shedding mechanism.	
13	Mill visit to observe maintenance practices.	

Submission – Completed Journal.

DKTES Textile and Engineering Institute, Ichalkaranji Final Year B. Tech. Textile Plant Engineering (Semester – VIII) TPP472: FLUID FLOW SYSTEMS AND CONTROLS LAB		
Teaching Scheme: Practical: 02 Hrs/Week	Credits 01	Evaluation Scheme: CIE: 50Marks
List of Experiments		
1	Study of direction control valves	
2	Study of meter – in flow circuit	
3	Study of meter – out flow circuit	
4	Operation of SAC – Unidirectional Control	
5	Operation of DAC – Bidirectional Control	
6	Study of circuits using sequence valve & time delay valve	
7	Study of pneumatic circuits on Textile Machines	
8	Study of different types of compressors used in pneumatic circuits	
9	Study of different types of pumps used in hydraulic circuits	
10	Study of ISO conventions used in pneumatics & hydraulics	
11	Study of power pack used in Hydraulic circuit	
12	Study of solenoid operated valves in Pneumatic & Hydraulic circuits	

Submission – – Completed journal