

Annexure D-I

Mapping of Courses vs CLOs vs PLOs

Sem No.	Course Code	Course Title	Assigned PLO	Course Learning Outcome CLO	PLO
1	TE-113	Introduction to Textile Engineering	1-4, 9	1. <u>Knowledge</u> of fundamental concepts of spinning weaving and wet processing (C1 Remember) 2. Ability to <u>analyze</u> simple, combinational and sequential textile processes problems (C4 Analyze) 3. Ability to <u>design</u> textile yarn, weaves and different structures (C5 Evaluate) 4. Ability to independently consult on fundamental <u>knowledge</u> of textile back process (C2 Understand)	1, 2 2, 4 3 1, 2, 9
	ME 114	Engineering Drawing	1, 2, 3, 10, 12	1. <u>Understand</u> the basic principle of Technical Engineering Drawing (C2 Understand) 2. Students are able to <u>understand</u> the theory of projection (C2 Understand) 3. Students are able to know and <u>understand</u> the conventions and methods of engineering drawing (C2 Understand) 4. Students are able to improve their visualization skills so that they can <u>apply</u> these skills in developing new products (C3 Apply) 5. Students are introduced with the <u>concepts</u> of working, drawing of components, parts of machine and engines (C2 Understand)	1, 3 1 1, 3 1, 2, 10, 12 1, 2, 10, 12

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ME-101	Engineering Mechanics	1, 2, 3, 4, 12	1	Students are able to <u>apply</u> correct mathematics while analyzing rigid body mechanics problem (C3 Apply)	1-4
			2	Students are able to <u>calculate</u> unknown loading in real life engineering problems pertaining to equilibrium of a given system (C3 Apply)	1-4
			3	Students are able to <u>design</u> structure and machine frames when loading conditions are given (C5 Evaluate)	1-4
			4	Students are able to <u>grasp concepts</u> of internal loading and resulting stresses (C2 Understand)	1-4, 12
			5	Students are able to <u>solve problems</u> involving non-equilibrium/accelerated motion of rigid objects (C3 Apply)	1-4
MT 114	Calculus	1, 2, 5, 12	1	<u>Apply</u> the mathematical tools in relevant engineering problems (C3 Apply)	2
			2	<u>Calculate</u> the limit of function at a point numerically and algorithmically using appropriate techniques (C3 Apply)	1
			3	<u>Interpret</u> the derivatives of function at a point as a slope of tangent (A 2 Respond)	5
			4	<u>Analyze</u> and interpret data represented by different curves and graphs (C4 Analysis)	5, 12
HS 105	Pakistan Studies	8, 9, 10, 12	1	<u>Demonstrate</u> a better understanding of rationale of creation of Pakistan (C2 Understand)	8
			2	Have <u>knowledge</u> about Pakistan as a state and nation (C1 Remember)	10, 12
			3	Have a <u>sense</u> of closeness and solidarity with Pakistan and its people (C2 Understand)	9

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2	TE 111	Textile Chemistry	1, 2, 4, 6, 7, 10, 12	<ol style="list-style-type: none"> 1. Possess sufficient knowledge of Chemistry required to pursue in chemical processing (C2 Understand) 2. Ability to determine chemical properties of substances (C5 Evaluate) 3. Ability to understand the working principle of devices using the knowledge gained in chemistry (C3 Apply) 4. Ability to apply knowledge gained through this course in understanding of textile processing (C3 Apply) 5. Ability to solve problems using fundamental concepts and provide foundation for advance subjects (C4 Analyze) 6. Ability to analyze the performance of operations and processes and to identify methods for better performance (C4 Analyze) 	<p>1, 2,</p> <p>4, 7</p> <p>6, 10</p> <p>1, 10, 12</p> <p>2, 4, 12</p> <p>2, 4, 12</p>
	ME 112	Thermodynamics	1-5, 10, 12	<ol style="list-style-type: none"> 1 Possess sufficient knowledge of fundamental concepts of Thermodynamics (C1 Remember) 2 Students will be able to determine the thermal properties of substances (C5 Evaluate) 3 Students will be able to apply the knowledge gained through this course in understanding of thermal properties evaluation, thermodynamics cycle and energy conservation process (C3 Apply) 4 Students will be able to understand the basic operational mechanism of boiler, internal combustion engine and compress (C2 Understand) 	<p>1-5, 12</p> <p>1-3, 5</p> <p>1-5, 10, 12</p> <p>1-5, 12</p>

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	ME 104	Workshop Practice	1, 2, 3, 10, 12	<p>1 Demonstrate an understanding of workshop safety regulations to prevent accidents and avoid poor work practices and the ability and motivation to apply them (C2 Understand)</p> <p>2 Possess an ability to identify, select and use proper measuring instruments, carpentry tools and fitting shop tools to prepare simple joints according to prescribed tolerances (C3 Apply)</p> <p>3 Possess experience of bench fitting practice and exercise in marking fittings (C3 Apply)</p> <p>4 Develop an understanding of the usage of smith`s forge and have complete exercises in bending , and swaging (C2 Understand)</p> <p>5 Develop a familiarity with the processed of soldering, brazing , welding, heat treatment, moulding and casting (C2 Understand)</p> <p>6 Develop a familiarity with simple machine shop processes such as turning, shaping, milling and sheet metal work (C2 Understand)</p> <p>7 Possess an ability to create simple process plans for preparation of different jobs using tools available in the workshop (C6 Create)</p>	<p>1, 2, 3</p> <p>1, 2, 3, 12</p> <p>1, 2, 3</p> <p>1, 2, 3</p> <p>1, 2, 3, 10</p> <p>1, 2, 3, 12</p> <p>1, 2, 3, 10, 12</p>
	HS 104	Functional English	3, 4, 5, 8, 10, 12	<p>1 Students will be able to complete academic writing assignment by adopting appropriate writing strategies to suit the context (C3 Apply)</p> <p>2 Students will be able to deliver effective presentations to participate actively in group discussions at an acceptable level of oral proficiency (C3 Apply)</p> <p>3 Students will be able to apply the grammar rules in order to enhance their written and spoken English skills (C3 Apply)</p> <p>Students will demonstrate expertise in core physics concepts and their applications (C3 Apply)</p>	<p>3, 4, 12</p> <p>5, 8, 10</p> <p>3, 4</p>

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	PH 122	Applied Physics	1, 2, 4, 5, 10	<p>1 Students will be able to <u>describe</u> the basic concepts of vectors and mechanics and shall be able to apply these concepts on their future studies of other textile subjects (C2 Understand)</p> <p>2 Students will <u>demonstrate</u> proficiency in problem solving and analysis (C3 Apply)</p> <p>3 Students will <u>demonstrate</u> expertise in core physics concepts and their applications (C3 Apply)</p>	1, 2 2, 4 5, 10
	EE 122	Basic Electricity & Electronics	1-5, 10, 12	<p>1 Sufficient <u>knowledge</u> of the fundamentals of Electrical and electronics engineering (C1 Remember)</p> <p>2 Ability to <u>select</u> best approach for electrical circuit analysis (C3 Apply)</p> <p>3 Thorough <u>understanding</u> of principles and application of various electrical and electronic machines (C2 Understand)</p> <p>4 Capable to <u>apply</u> knowledge of mathematics, science and engineering and infer results from practical observations (C3 Apply)</p> <p>5 Ability to <u>use</u> basic work bench instruments effectively (C3 Apply)</p>	1 2-4 1-5, 12 2-5, 10 1

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3	TE 203	Computer Programming & Applications	1-5, 8-12	<p>1 <u>Discuss</u> fundamental concepts in Information Technology and their application in various scientific disciplines (C2 Understand)</p> <p>2 <u>Demonstrate</u> the ability to identify the different components and peripheral devices in a computer system explaining their architecture and working mechanisms (C3 Apply)</p> <p>3 <u>Describe</u> the features and functions of the major categories of applications software (C2 Understand)</p> <p>4 <u>Describe</u> the principles, protocols and devices behind computer networks and the Internet (C1 Remember)</p> <p>5 Utilize search engines for online research and correct citation of internet based resources (C3 Apply)</p> <p>6 <u>Demonstrate</u> problem solving skills and develop algorithms (C4 Analyze)</p> <p>7 <u>Develop</u> computer programs using a flexible high level programming language (C6 Create)</p> <p>8 <u>Apply</u> logical and programming skills to <u>develop</u> a software project of moderate complexity, working effectively in teams C 6 (Create)</p>	<p>1, 3</p> <p>1, 5</p> <p>5, 10</p> <p>1</p> <p>4, 10</p> <p>2, 3</p> <p>3, 5</p> <p>1-3, 5, 8-12</p>
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	TE 212	Dyestuff Engineering	1-4, 9, 12	<ol style="list-style-type: none"> 1. Refine concepts related to colours, properties of various colours depending on their chemical structure and their application properties on textiles. (C2 Understand) 2. Analyze problems associated with colours and their application on textiles. (C4 Analyze) 3. Analyze various fastness properties showed by dyed textiles based on different dye chemistries. Analyze and suggest possible solutions for dyeing problems associated with dye structure and their chemical class. (C3 Apply) 4. Analyze dyeing problems associated with human perception of colour on textiles and suggest their solutions. (C4 Analyze) 	<p>1, 2</p> <p>2,3, 4, 12</p> <p>2, 3, 4, 9, 12</p> <p>2, 3, 4, 9, 12</p>
	TE 214	Polymer & Fibre Science	1, 3-7, 9, 10, 12	<ol style="list-style-type: none"> 1. Understand fundamental concepts of polymer and fibre science (C2 Understand) 2. Understand the classification of textile fibres (C2 Understand) 3. Comprehend the chemical and physical properties of natural, synthetic and regenerated fibres (C2 Understand) 4. Select evaluate and analyze textile product in terms of its fibre composition, characteristics and end use (C5 Evaluate) 	<p>1, 12</p> <p>1, 12</p> <p>1, 12</p> <p>1, 3-7, 9, 10, 12</p>

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EL 232	Electronics	1, 2, 3, 5, 6, 7, 9, 10	<ol style="list-style-type: none"> 1. Students are able to demonstrate the fundamental concepts of electronics and circuit design (C2 Understand) 2. Students are able to design and troubleshoot basic electronic circuits (C5 Evaluate) 3. Students will be able to use simulation tools for circuit design (C3 Apply) 4. Students will be familiar with the application of electronic device in real time application and industries (C2 Understand) 5. Students will be capable of working with equipment in real life time and can apply knowledge to the field (C3 Apply) 	1, 2, 3, 5 6, 7, 9, 10 1, 2 1, 2, 3, 10 1-3
HS 205	Islamic Studies OR	6, 8,10, 12	<ol style="list-style-type: none"> 1. Demonstrate a better understanding of Quran & Sunnah (C2 Understand) 2. Improve skills of recitation of Quran and Hadith in Arabic and will better interpret its meaning and message (C3 Apply) 3. Have a sound knowledge about basic Islamic principles (C1 Remember) 4. Able to apply basic principles of Islam in their personal and professional domains of life according to the Sunnah (C3 Apply) 5. Know the distinct feature of Islamic culture and civilization (C2 Understand) 	6, 8 10, 12 8, 10 6, 8 10, 12
HS 209	Ethical Behavior	6, 8,10, 12	<ol style="list-style-type: none"> 1. Have the knowledge about the ethical teaching of the world's major religions (C2 Remember) 2. Able to develop a broader prospective about life and bring a positive change in their thoughts, behavior and actions (C2 Understand) 3. Able to understand and reflect the implication of ethics on their professional life (C3 Apply) 	6, 8 10, 12 10, 12

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4	ME 210	Fluid Mechanics	1-6, 9, 10, 12	<ol style="list-style-type: none"> 1. Possess sufficient knowledge of fluid statics, fluid dynamics, fluid measurements and machineries (C1 Remember) 2. Ability to apply knowledge gained through this course in understanding of textile material processing (C3 Apply) 3. Ability to solve fluid mechanics problems using fundamental concepts (C3 Apply) 4. Ability to develop mathematical models applying the knowledge gained through this course (C3 Apply) 5. Ability to evaluate the performance of devices and to identify methods for improvement of performance (C5 Evaluate) 	<p>1-6, 12</p> <p>1-6, 9, 12</p> <p>1-4, 6, 10</p> <p>1-6, 12</p> <p>1-6, 10, 12</p>
	MT 225	Linear Algebra & Ordinary Diff. Equations	1-3, 5, 10	<ol style="list-style-type: none"> 1. Students will be able to demonstrate the understanding about mathematical concepts and methods described in the syllabus i.e. linear algebra, vector, calculus, ordinary differential equation and laplace transformation methods (C2 Understand) 2. Students will understand the application of mathematics in engineering and will demonstrate the ability to solve engineering problems by using mathematical tools studied in the course (C3 Apply) 	<p>1-3, 5</p> <p>1, 5, 10</p>

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	TE 211	Textile Yarn Manufacturing Processes	1-5, 9, 11	<ol style="list-style-type: none"> 1. Knowledge of fundamental concepts of yarn numbering system, yarn faults and yarn properties (C2 Understand) 2. Ability to understand the mechanisms involved in yarn manufacturing and the stages of processing (C2 Understand) 3. Ability to understand necessary considerations for opening and cleaning of fibres, removal of impurities, twisting operations, draft settings, and the selection of appropriate machine components and parameters (C3 Apply) 4. Ability to rectify machine operational faults and to suggest the corrective actions (C5 Evaluate) 5. Ability to develop the spin plan by using basic production calculations (C6 Create) 	1-3 1-4 5, 9 2,3,4 9, 11
	MM 205	Mechanics of Material	1-4, 12	<ol style="list-style-type: none"> 1. To refine the concepts pertaining to internal stresses and resulting strains in deformable bodies (C2 Understand) 2. To be able analyze problems involving complex loadings that result in multi-axial state of stress and strain (C4 Analyze) 3. To be able to apply stress and strain transformation concepts to analyze the respective states at numerous orientations with respect to the given orientation (C3 Apply) 4. To be able to analyze deflection in structural members that are subjected to various types of loadings including axial load, torsion, bending and transverse shear and to determine the associated strain energy (C4 Analyze) 	1-4 1-4 1-4 1-4, 12

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	ME 205	Element of Machine Dynamics & Design	1-4, 6, 7, 9-12	<ol style="list-style-type: none"> 1. Ability to <u>apply</u> fundamental concepts of Machine design (C3 Apply) 2. Ability to <u>apply</u> the fundamental stress analysis, theories of failure and material science in the design of machine components (C3 Apply) 3. Ability to <u>design</u> and <u>analyze</u> shafts with different geometrical features under various loading conditions (C4 Analyze) 4. Ability to <u>design</u> and <u>analyze</u> simple machine elements like belts, ropes, chains, springs, bearings etc. (C4 Analyze) 	1-4, 6, 7, 9-12 1-4, 6, 7, 9-12 1-4, 6, 7, 9-12 1-4, 6, 7, 9-12
	ME 208	Material Science	1-4, 9	<ol style="list-style-type: none"> 1. Knowledge of fundamental concepts of materials (C3 Understand) 2. Ability to <u>analyze</u> simple combinational and sequential material fabrication processes (C4 Analyze) 3. Ability to <u>design</u> various material structures (C4 Analyze) 4. Ability to independently <u>consult</u> on fundamental knowledge of various material properties and their uses (A2 Respond) 	1,2 2, 4 3 1-3, 9
5	TE 312	Textile Fabric Manufacturing Processes	1-6, 9-12	<ol style="list-style-type: none"> 1. <u>Knowledge</u> of fundamental concepts of pre-processes for fabric manufacturing (C1 Remember) 2. Ability to <u>analyze</u> different pre-processes problems and their solutions for fabric manufacturing (C4 Analyze) 3. Ability to <u>apply</u> minimization techniques and practical considerations to the manufacturing process requirements in a weaving mill (C3 Apply) 4. Ability to independently <u>design</u> and <u>analyze</u> textile weaves and different structures (C6 Create) 	1, 6, 10 1, 2, 4, 12 1-3, 5, 6, 12 1, 3, 4, 9, 11, 12

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TE 304	Textile Mill Utilities-I	1-4, 7, 9-12	<ol style="list-style-type: none"> 1. Students will be able to <u>demonstrate</u> the <u>understanding</u> about the operation of various textile mill utilities like power plants, boilers, nozzles, turbines, engines, etc. (C2 Understand) 2. Students will be able to <u>evaluate</u> the performance and power of heat engines, boilers, and power plants (C5 Evaluate) 3. Students will be able to <u>analyze</u> and solve the problems related to textile mill utilities and to conduct the computation of associated heat transfer (C4 Analyze) 	<p>1-4, 7, 9-12</p> <p>1-4, 7, 9-12</p> <p>1-4, 7, 9-12</p>
TE 305	Quality Control in Textiles	1-4	<ol style="list-style-type: none"> 1. Students will be able to <u>describe</u> the basic <u>concepts</u> of statistics and probability and its application in textile and other industries (C2 Understand) 2. Students will be able to <u>compile</u> and <u>analyze</u> data effectively. They will be able to identify the problems during the process and relate these problems to the product (A2 Respond) 3. It will equip the students with the tools necessary for quality <u>compliance</u> (P4 Mechanism) 4. It will help the students to <u>understand</u> international as well as national quality control standards of various textile products (C2 Understand) 	<p>1-4</p> <p>2-4</p> <p>2</p> <p>1, 2</p>

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	TE 316	Textile Chemical Processes-I	1, 2, 4, 5, 7, 12	<ol style="list-style-type: none"> 1. Understand the application of different dyes to different substrate including cotton, wool and synthetic by different dyeing methods (C2 Understand) 2. Comprehend the modern textile dyeing and finishing techniques and machines for different textile products (C2 Understand) 3. Evaluate the efficiency of different processes and establish an inter-relationship between different processes (C5 Evaluate) 4. Apply the textile pre-treatment, dyeing and finishing concepts and principles for the technical controlling the production of bleached, dyed and finished textile products in real cases (C3 Apply) 	1 1, 2,4, 5, 12 1, 2, 4, 5, 7, 12 1, 2, 4, 5, 7, 12
	ME 311	Manufacturing Processes	1-4, 6, 7, 9, 10, 12	<ol style="list-style-type: none"> 1. Classify and describe the various manufacturing processes that are used for the production of mechanical parts and products according to the needs of its construction (C1 Remember) 2. Employ the theoretical knowledge of various manufacturing processes when a specific product has to be manufactured (C3 Apply) 3. Compare and contrast the advantages and limitations of different manufacturing processes (C5 Evaluate) 4. Evaluate/Design the better way of manufacturing and construction of mechanical parts or products by means of various manufacturing processes and the corresponding manufacturing machines (C5 Evaluate) 5. Demonstrate the professional Skills to communicate in both oral and written forms and to be proficient in working in diverse teams or in individual capacity (C3 Apply) 	1, 3, 12 1-4, 12 1, 3, 6, 7, 9, 12 1-4, 6, 7, 12 1-4, 9, 10, 12

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	HS 304	Business Communication & Ethics	4-6, 8-10	<ol style="list-style-type: none"> 1. <u>Demonstrate</u> good oral communication skills in interpersonal situations, presentations and during meetings and employment interviewing (C3 Apply) 2. <u>Write</u> effective messages (letters, e mails, memos, short reports, meeting notices, agenda and minutes, employment requests) pertaining organizational communication (A2 Respond) 3. <u>Develop</u> a sharp understanding towards professional ethics and apply the principles and codes of ethics to solve cases and problems related to professional activities (C4 Analyze) 	4-6 8-10 4, 6, 8, 10
6	TE 313	Textile Product Evaluation-I	1-7, 12	<ol style="list-style-type: none"> 1. Students gain <u>knowledge</u> of textile testing and standard test methods and will demonstrate the ability to apply it for the evaluation of textile products (C2 Understand) 2. Students will <u>demonstrate</u> the importance of standard atmosphere for testing with respect to specific textile products (C2 Understand) 3. Students will <u>demonstrate</u> the ability to <u>develop</u> an understanding of sampling plan for textile products for evaluating their specific properties and performance during end use (C6 Create) 4. Students will <u>demonstrate</u> the ability to analyze suitable test procedure or equipment for <u>evaluating</u> the physical and mechanical properties of textile materials i.e. fibre, yarn & fabric (C5 Evaluate) 	1-6, 12 1, 3, 5, 7 1-6, 12 1-6

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EE 444	Electrical Drives	1-4, 9,10, 12	<ol style="list-style-type: none"> 1. Know the characteristics and applications of power electronic components (C2 Understand) 2. Possess sufficient knowledge of electrical drive systems and their role in various applications such as flexible production systems, energy conservations, renewable energy, transportation etc. making electrical drives as enabling technology (C3 Apply) 3. Select suitable size electric motors for given applications based on torque/speed characteristics, efficiency, cost supply requirements, dynamics performance and controllability (C3 Apply) 4. Possess sufficient knowledge of electrical drives and connect theoretical concepts with practical application of electrical drives (C2 Understand) 5. Role of electronic in speed control and efficiency improvement of electrical drives (C5 Evaluate) 	<p>1-3</p> <p>1-4</p> <p>9, 10, 12</p> <p>4, 10, 12</p> <p>10, 12</p>
ME 305	Machine Design	1-7	<ol style="list-style-type: none"> 1. Apply knowledge of fundamental concepts of machine design (C3 Apply) 2. Analyze problems in existing machine elements and assemblies (C4 Analyze) 3. Demonstrate the preceding abilities by performing correctly the selection, sizing, design, and analysis of shafts, springs, bearing, gear systems and other mechanical components/systems (C5 Evaluate) 	<p>1</p> <p>1</p> <p>1-7</p>

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MF 303	Applied Economics for Engineers	2, 4	<ol style="list-style-type: none"> 1. Students will be able to <u>understand</u> the economic environment of a business (C2 Understand) 2. Students will be able to <u>understand</u> the principles and basic concepts of engineering economy (C2 Understand) 3. Students will be able to understand the <u>methodology</u> of engineering economy (C3 Apply) 4. Students will be able to apply the methodology of engineering economy for rational decision making in business (C4 Analyze) 	2, 4 2, 4 2 2
MT 333	Advance Calculus & Fourier Analysis	1-5, 10, 12	<ol style="list-style-type: none"> 1. Ability to <u>apply</u> knowledge of mathematics to solve engineering problems (C3 Apply) 2. Students will demonstrate <u>understanding</u> of basic concepts and formation of partial differential equations by realistically selecting and applying the governing equations in problem solving (C2 Understand) 3. Students will <u>demonstrate</u> the ability to simplify given engineering problems using tools of advanced calculus and Fourier analysis (C4 Analyze) 4. Students will <u>demonstrate</u> ability to use modern engineering tools to arrive at solution to the given engineering problem (C5 Evaluate) 	1-4 5, 10, 12 4, 5 10, 12

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7	TE 461	Advanced Yarn Manufacturing Mechanisms	1, 2, 4, 5, 11, 12	<p>1. Students will be able to demonstrate expertise in modern spinning techniques (C2 Understand)</p> <p>2. Students will develop their understanding about working mechanism of different spinning mechanisms (C2 Understand)</p> <p>3. Students will be able to understand raw material requirements and process parameters for different types of modern spinning machines (C3 Apply)</p> <p>4. Students will be able to plan their own spinning mill and do the cost calculations (C6 Create)</p>	1, 2 1, 2, 12 4, 5 11, 12
	TE 405	Textile Mill Utilities-II	1-4, 7, 9, 11, 12	<p>1. Possess sufficient knowledge of air conditioning, ventilation and water supply and sewerage (C1 Remember)</p> <p>2. Ability to determine airflow, ventilation, and energy use in air conditioning and ventilation systems (C5 Evaluate)</p> <p>3. Ability to understand the working principle of devices (C2 Understand)</p> <p>4. Ability to apply knowledge gained through this course in understanding of water supply, water and waste water treatments (C3 Apply)</p> <p>5. Ability to solve problems related to using fundamental concepts (C3 Apply)</p> <p>6. Ability to analyze the performance of water supply, water treatment and Air conditioning systems and to identify methods to optimize the operations (C4 Analyze)</p>	1, 2, 7, 9, 11, 12 1-4, 7, 9, 11, 12 1, 11, 12 1-4, 7, 9, 11, 12 1-3, 11, 12 1-4, 7, 11, 12

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	TE 409	Transport Phenomena	1-5, 8-10, 12	<ol style="list-style-type: none"> 1. Basic <u>understanding</u> of the application of tools/concepts of transport phenomena learned in this course to the textile processes and equipment (C2 Understand) 2. Ability to <u>analyze</u> heat transfer problem in all three modes, formulate the necessary equations and <u>calculate</u> the temperature distribution (C4 Analyze) 3. Ability to perform <u>basic calculation</u> of common heat exchangers to determine relevant design parameters (C5 Evaluate) 4. Ability to <u>understand</u> various modes of mass transfer such as diffusion mass transfer and convective mass transfer and to apply associated tools/concepts in the practical scenario (C5 Evaluate) 	1-4, 8, 10, 12 1-5, 8-10, 12 1-5, 8-10, 12 1-5, 8-10, 12
	TE 414	Textile Chemical Processes-II	1-4, 7, 12	<ol style="list-style-type: none"> 1. Students will have a thorough <u>knowledge</u> of the pre-treatment and post-treatment processes required for textile printing (C1 Remember) 2. Students will have developed <u>understanding</u> of conventional as well as modern textile printing processes and machines (C2 Understand) 3. Students will be able to <u>comprehend</u> the engineering and technical aspects pertaining to the processes as well as machineries used in textile printing (C3 Apply) 4. Students will be able to <u>identify</u> the causes of various practical problems and logically apply the concepts and principles of textile printing and related operations to <u>solve</u> the same (C6 Create) 	1-4, 7 1-4, 12 1-4 1-4, 12

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	TE 451	Automation & Control in Textile	1-5, 8, 12	<ol style="list-style-type: none"> 1. Apply fundamentals concepts of automation and controls (C3 Apply) 2. Apply the knowledge of migration strategy, plant lay out, work part transfer system and line balancing to improve the production of textile industries (C3 Apply) 3. Comprehend the basis structures, components and terminologies of a control system (C2 Understand) 4. Analyze the problems involving control system characteristics such as Stability, sensitivity and disturbance (C4 Analyze) 5. Analyze the automatic machine parts/assemblies and design basic PLC network (C6 Create) 	1-4, 8, 12 1-4, 12 1, 2, 4, 12 1, 2, 4, 12 1-5, 12
8	TE 462	Advanced Fabric Manufacturing Mechanism	1-4, 9	<ol style="list-style-type: none"> 1. Knowledge of advance concepts of weaving (C1 Remember) 2. Ability to analyze simple combinational and sequential weaving processes problems (C4 Analyze) 3. Ability to design textile weaves and different fabric structures (C6 Create) 4. Ability to independently consult on fundamental knowledge of various fabric manufacturing mechanism. (A2 Respond) 	1, 2 2-4 3, 9 1, 2, 9

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Mapping of Courses vs CLOs vs PLOs

	TE 406	Textile Production Management	1-6, 9-12	<ol style="list-style-type: none"> 1. Basic <u>understanding</u> of the application of tools/concepts of production management learned in this course to practical situations and awareness of the future challenges and directions that relate to the production management (C2 Understand) 2. Ability to <u>decide</u> the location of plant by utilizing the various location selection methods; and design of plant layout according to the process requirement of the particular product. (A4 Organize) 3. Ability to understand and <u>apply</u> the concepts/tools involved in the production planning and control i.e. Aggregate Planning, Inventory Management, and MRP in order to minimize the cost involved and maximizing the profit (C3 Apply) 4. <u>Familiarization</u> with the Project Management tools and their implementation i.e. Network Diagrams, CPM/PERT analysis (P4 Mechanism) 5. Ability to help improve the effectiveness and efficiency of production systems by the use of Work Study and maintenance management approaches (C6 Create) 	<p>1,2 4-6, 10, 12</p> <p>1, 3- 5, 10, 12</p> <p>1-5, 12</p> <p>1, 3- 6, 9- 12</p> <p>1-4, 9, 10, 12</p>
	TE 407	Textile & Environment	1-4, 7, 12	<ol style="list-style-type: none"> 1. <u>Understand</u> fundamental concepts of environmental science and engineering. (C1 Remember) 2. <u>Identify</u> the elements within a system, or process responsible for pollution and suggest the best available method or technique required to control it (C3 Apply) 3. <u>Relate</u> various risks associated to health and safety issues of a worker in a textile industry (Analyze) 4. <u>Apply</u> their knowledge for the sustainable approaches within the textile industry (C3 Apply) 	<p>1, 2, 7</p> <p>1-4, 7,12</p> <p>1, 7, 12</p> <p>1-4, 7,12</p>

Annexure D-I

Mapping of Courses vs CLOs vs PLOs

	TE 413	Textile Product Evaluation-II	1-5, 7, 12	<ol style="list-style-type: none"> 1. <u>Conduct</u> experiments as per standard test methods (C5 Evaluate) 2. <u>Analyze</u> and Interpret test results to improve or modify the process or material in order to meet the customer specification (C4 Analyze) 3. <u>Analyze</u> the problems related with process, machine or material using standard test procedure (C4 Analyze) 4. <u>Design</u> experiments or equipments to evaluate new processes or products (C6 Create) 5. <u>Understand</u> the environmental regulations of textile industries and <u>analyze</u> the effect of new chemicals, textile products or processes on global environment (C2 Understand) 	1, 2, 5, 12 1-5, 12 1-5, 12 1-5, 12 1-5, 7, 12
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Annexure D-I

Mapping of Courses vs CLOs vs PLOs

	TE 408	Textile Engineering Design Project	3, 6-12	<ol style="list-style-type: none"> 1. Able to present the project outline, the objectives and expected results using good oral and written presentation skills (A2 Respond) 2. Able to identify and summarize previous work in the area and relate it to the current project (C2 Understand) 3. Able to formulate clearly a work plan and procedures by developing a Gantt Chart (A4 Organize) 4. Able organize, record and compile work done and the outcome of the project throughout the project (A4 Organize) 5. Show correct attitude towards achieving the goals and objectives of final year project (P2 Set) 6. Able to integrate the societal effects of the project on to the proposed engineering solution (A4 Organize) 7. Able to present the research outcome effectively as a group using good presentation skills (A2 Respond) 8. Able to compile analyze and present the project work carried out in the form of the project report (a2 Respond) 9. The project outcome should adhere to certain engineering standards (A4 Organize) 	<p>10</p> <p>3</p> <p>11</p> <p>12</p> <p>8</p> <p>7</p> <p>9</p> <p>12</p> <p>6</p>
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