

**Curriculum
For
Certificate in Industrial Engineering
(Certificate Level - 6 months)
Code:VJ92S004
(2013)**

Contents

Name of the Course	2	Assessment	39
Overall objectives of Course	2	Module-1 Perform product analysis	39
Competencies gained after completion of course.	2	Module-2 Perform Layout Planning	41
Knowledge Proficiency Details	3	Module-3 Perform capacity study	44
Job Opportunities available immediately and in future	4	Module-4 Coordinate with other departments	45
Future Trends	4	Module-5 Perform Training and Development	46
Trainee Entry Level	4	Module-6 Ensure Quality Improvements	49
Minimum qualification of Trainer	4	Module-7 Calculate Material Efficiency	50
Medium of Instruction	5	Module-8 Occupational Health and Safety	51
Timeframe of Assessment	5	Module-9 Process Design	53
Overview about the Program	6	Module-10 Develop Work Aids	55
Industrial Engineering Course Contents	13	Module-11 Manage Resources	56
Module-1 Duty to Perform product analysis	13	Module-12 Plan Preventive Maintenance	57
Module-2 Duty to Perform Layout Planning	14	Module-13 Develop Professionalism	59
Module-3 Duty to Perform capacity study	17	Module-14 Observe occupational health and safety practices	61
Module-4 Duty to Coordinate with other departments	18	Module-15 Communicate with co-workers effectively	63
Module-5 Duty to Perform Training and Development	19	Module-16 Work in a team	64
Module-6 Duty to Ensure Quality Improvements	22	Module-17 Manage Time	66
Module-7 Duty to Calculate Material Efficiency	23	List of Machinery / Equipment / Tools	68
Module-8 Duty to Occupational Health and Safety	24	List of Consumable Materials	70
Module-9 Duty to Process Design	25	Contributions for Development of this Curriculum	71
Module-10 Duty to Develop Work Aids	27		
Module-11 Duty to Manage Resources	28		
Module-12 Duty to Plan Preventive Maintenance	29		
Module-13 Duty to Develop Professionalism	31		
Module-14 Duty to Observe occupational health and safety practices	33		
Module-15 Duty to Communicate with co-workers effectively	34		
Module-16 Duty to Work in a team	35		
Module-17 Duty to Manage Time	37		

Name of the course

❖ Industrial Engineering

Overall objective of the Course

The objectives of this course are to:

- Learn about human capabilities and limitations.
- Learn how human capabilities and limitations can be incorporated into system design.
- Be able to complete a task analysis to identify human factors elements of designed systems.
- Be able to locate information required to redesign a product from a human factors perspective.
- Learn about the methods and skills that incorporate proven techniques in human engineering and ergonomics in developing engineering solutions.

Competencies gained after completion of the course

At the end of the course, the trainee must be able to attain the following competencies.

- Perform product analysis
- Perform Layout Planning
- Perform capacity study
- Coordinate with other departments
- Perform Training and Development
- Ensure Quality Improvements

- Calculate Material Efficiency
- Occupational Health and Safety
- Process Design
- Develop Work Aids
- Manage Resources
- Plan Preventive Maintenance
- Develop Professionalism
- Observe occupational health and safety practices
- Communicate with co-workers effectively
- Work in a team
- Manage Time

Knowledge Proficiency Details

- On successful completion of course, the trainees must have acquired the following knowledge & skills:
- Engineering and Technology - Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and Services.
- Production and Processing - Knowledge of raw materials, production processes, quality control, costs, and other techniques for Maximizing the effective manufacture and Distribution of goods.
- Mathematics - Knowledge of arithmetic, algebra, Geometry, calculus, statistics, and their applications.
Mechanical - Knowledge of machines and tools, including their designs, uses, repair, and maintenance.

- Design - Knowledge of design techniques, tools, and principles involved in production of precision technical Plans, blueprints, drawings, and models. Basic machine components
- Functions and uses of various machines
- Accessories of various machines and their functions
- Handle garments & manufacturing of garment with own hands to understand its complication during process.
- Quality control

Job Opportunities available immediately and in future

After completion of the training, candidates can find the employment opportunities in the following disciplines.

- Cottage Industry
- Self employment
- Garment Factories
- **Future Trends**
- Demanding
- Technology advancement

Trainee Entry Level

- Graduation

Minimum qualification of trainer

2- Years Certificate in industrial Engineering or 3- Years Industrial cum training experience.

OR

B.Sc. Textile Engineering 2- Year Industrial cum training experience in garment sector.

Medium of Instruction

- English/Urdu

Timeframe of assessment

Duration of Course	Six Months
Total Hours	800 hrs
Training Hours	765 hrs
Module Test	25 hrs
Final Test	10 hrs
Per Week Hours	30 hrs
Per Day Hours	05 hrs (6 days a week)

Overview about the program – Curriculum for Course Name

Module Title & Aim	Learning units	Theory hours	Workplace hours	Total Hours
<p>Module 1: Perform product analysis</p> <p>Aim:</p> <p>This module develops Competency to perform product analysis.</p>	<p>LU-1 Select the product</p> <p>LU-2 Identify the type of product</p> <p>LU-3 Operational analysis</p>	10	15	25
<p>Module 2: Perform Layout Planning</p> <p>Aim:</p> <p>This module develops competency to perform lay out planning.</p>	<p>LU-1 Identify the spreading and Cutting area in Cutting department.</p> <p>LU-2 Identify the numbering and bundling Area.</p> <p>LU-3 Identify the fabric and cutting stock area</p> <p>LU-4 Specify the types and name of machines</p> <p>LU-5 Arrange the equipment according to the required process</p> <p>LU-6 Specify the operations sequence of product and also categorize them</p> <p>LU-7 Identify the washing area</p>	85	50	135

	<p>LU-8 Identify the required washing process of product</p> <p>LU-9 Identify the process of finishing and Packing</p> <p>LU-10 Identify the capacity of ware house with required tools and materials.</p>			
<p>Module 3: Perform capacity study</p> <p>Aim:</p> <p>This module develops competency to understand to Perform capacity study.</p>	<p>LU-1 Calculate the SAM (standard Allowed minutes) of product</p> <p>LU-2 Conduct the time and motion study</p> <p>LU-3 Plan to repeat this practice Internally</p>	20	35	55
<p>Module 4: Coordinate with other departments</p> <p>Aim:</p> <p>This module develops competency to understand Coordination with other departments.</p>	<p>LU-1 Identify and communicate the requirements to the concerned Departments.</p> <p>LU-2 Arrange meetings as per requirements with concerned Departments.</p>	20	10	30
<p>Module 5: Perform Training and Development</p>	<p>LU-1 Maintain Discipline & Operator Training</p> <p>LU-2 Use training aids</p>	110	60	170

<p>Aim:</p> <p>This module develops competency to understand to Perform Training and Development</p>	<p>LU-3 Select the right person for right job</p> <p>LU-4 Maintain documentation</p> <p>LU-5 Develop trainee for required efficiency level</p> <p>LU-6 Transfer trained operator to Production department</p> <p>LU-7 Develop methods</p> <p>LU-8 Improve existing methods</p> <p>LU-9 Follow up trained operators for Methods and specs.</p> <p>LU-10 Maintain housekeeping.</p> <p>LU-11 Develop SOPs (standard operating procedures)</p> <p>LU-12 Develop job descriptions</p>			
<p>Module 6: Ensure Quality Improvements</p> <p>Aim:</p> <p>This module develops competency to get Acquaintance & understand the Quality Improvements.</p>	<p>LU-1 Select right machines for right Operations</p> <p>LU-2 Proper use of work aids.</p>	<p>10</p>	<p>10</p>	<p>20</p>

<p>Module 7: Calculate Material Efficiency</p> <p>Aim:</p> <p>This module develops competency to Calculate Material Efficiency.</p>	<p>LU-1 Select right materials</p> <p>LU-2 Check wastage of material</p> <p>LU-3 Prevention of wastage by controlling methods and machines</p>	10	5	15
<p>Module 8: Occupational Health and Safety</p> <p>Aim:</p> <p>This module develops competency to understand Occupational Health and Safety.</p>	<p>LU-1 Develop evacuation plan</p> <p>LU-2 Identify and control hazards</p> <p>LU-3 Train workers for evacuation</p> <p>LU-4 Train workers for first aid</p>	35	20	55
<p>Module 9: Process Design</p> <p>Aim:</p> <p>This module develops competency to get Acquaintance & understand the Process Design</p>	<p>LU-1 Check the cutting layout capacity (area calculation)</p> <p>LU-2 Check work in process layout capacity (cutting, sewing and finishing)</p> <p>LU-3 Provide patterns for tracing and Pressing</p> <p>LU-4 Provided style bulletin</p>	40	20	60

<p>Module 10: Develop Work Aids</p> <p>Aim:</p> <p>This module develops competency to understand the development of work aids.</p>	<p>LU-1 Provide supporting materials (folders, edge guides , racks , trolleys etc)</p> <p>LU-2 Check comfortability</p>	10	10	20
<p>Module 11: Manage Resources</p> <p>Aim:</p> <p>This module develops competency to Manage Resources</p>	<p>LU-1 Calculate required man power</p> <p>LU-2 Specify required lighting Arrangements</p> <p>LU-3 Calculate space consumption(Work in process ,cutting ,stitching)</p>	25	10	35
<p>Module 12: Plan Preventive Maintenance</p> <p>Aim:</p> <p>This module develops competency to get Acquaintance & understand to Plan Preventive Maintenance.</p>	<p>LU-1 Oil machines</p> <p>LU-2 Repair machines</p> <p>LU-3 Set needle gauge</p> <p>LU-4 Reserve machines</p> <p>LU-5 Keep machine record</p> <p>LU-6 Adjust safety guard on machines</p>	30	10	40

<p>Module 13: Develop Professionalism</p> <p>Aim:</p> <p>This module develops competency to Develop Professionalism</p>	<p>LU-1 Participate in Training</p> <p>LU-2 Interact with colleagues</p> <p>LU-3 Consult with experts</p> <p>LU-4 Participate in skill test/ Competition</p>	<p>20</p>	<p>05</p>	<p>25</p>
<p>Module 14: Observe Occupational health and safety practices</p> <p>Aim:</p> <p>This module develops competency to observe occupational health and safety practices.</p>	<p>LU-1 Observe health, safety and security Related procedures.</p> <p>LU-2 Follow workplace health safety and security requirements</p> <p>LU-3 Follow of planning , organizing and Safe work techniques</p> <p>LU-4 Deal with hazardous or emergency Situations</p>	<p>20</p>	<p>5</p>	<p>25</p>
<p>Module 15: Communicate with co-workers effectively</p> <p>Aim:</p> <p>This module develops competency to get Acquaintance& understandCommunication with co-workers effectively.</p>	<p>LU-1 Adopt effective Communication and Behaviour with co-workers.</p> <p>LU-2 Interpret work related instructions Correctly.</p> <p>LU-3 Produce reports and prepare Workrelated documents in a proper form</p>	<p>15</p>	<p>5</p>	<p>20</p>

<p>Module 16: Work in a Team</p> <p>Aim: This module develops competency to Work in a Team</p>	<p>LU-1 Perform duties and responsibilities in a positive manner</p> <p>LU-2 Seek assistance from co-workers When difficulties arise</p> <p>LU-3 Respect difference in personal Beliefs and values</p> <p>LU-3 Contribute to group work activities</p> <p>LU-4 Share information related to group Members</p> <p>LU5 Provide support to achieve organizational goals</p>	10	5	15
<p>Module 17: Manage Time</p> <p>Aim: This module develops competency to manage the time.</p>	<p>LU-1 Manage time to complete the Assigned work.</p> <p>LU-2 Manage work load as required by The management</p> <p>LU-3 Prioritize tasks</p> <p>LU-4 Meet the specified deadlines</p> <p>LU-5 Handle the co-workers</p>	15	5	20
Assessment		35		
Total Hours		485	280	800

Industrial Engineering Curriculum Contents

Module 1 Title: Perform product analysis

Objective of the Module: Get understanding to develop competency to get understanding of performing product analysis.

Duration: 25 hours

Theory: 10 hours

Practice: 15 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Select the product	Understand The different Types related to garment/product. Able to select right sample from given garments/products.	<ul style="list-style-type: none"> • Knowledge of knitted and woven garment • Ability to check the right material. 	10	<ul style="list-style-type: none"> • Trouser • Pant • Polo Shirt • Crew Neck Shirt • Hood • Jacket 	Workshop/workplace
LU-2 Identify the type of product	Understand the name of garment Polo shirt, Crew Neck shirt, Hood, Trouser, Basic 5 pocket jeans. Able to identify the product like basic Fashion or Semi Fashion.	<ul style="list-style-type: none"> • Knowledge of construction of garment and also such garment mostly demanded by customer. • Ability to check and realize the quality standard of the garment. 	5	Fabric of different types like <ul style="list-style-type: none"> • Denim • Knits 	Workshop/workplace
LU-3 Do operational analysis (cut to pack)	Understand the cutting, stitching, washing, pressing and packing requirements of garment. Able to Analyze the operations of garment that which operation will come after the other in cut to pack process.	<ul style="list-style-type: none"> • Knowledge of material used in cut to pack process. • Ability to select right operations for garment. 	10	<ul style="list-style-type: none"> • Trouser • Pant • Polo Shirt • Crew Neck Shirt • Hood • Jacket 	Workshop/workplace

Module 2 Title: Perform Layout Planning

Objective of the Module: Get understanding to develop competency to how to perform lay out planning.

Duration: 135 hours

Theory: 85 hours

Practice: 50 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Identify the spreading and cutting area in Cutting department.	Understand The spreading and cutting area required for that purpose. Able to use of mathematics for calculations.	<ul style="list-style-type: none"> Knowledge of garment cut parts. Ability to right assessment of area for cutting and spreading tools required in department. 	10	<ul style="list-style-type: none"> Work station Cutting table, Spreading machine 	Workshop/workplace
LU-2 Identify the numbering and bundling area.	Understand the numbering and bundling concept. Able to know the process of numbering and bundling.	<ul style="list-style-type: none"> Knowledge of tools used for numbering and bundling. Ability to Check the right numbering and bundling area set according to required capacity. 	15	<ul style="list-style-type: none"> Cut fabric Numbering machine 	Workshop/workplace
LU-3 Identify the fabric and cutting stock area	<ul style="list-style-type: none"> Knowledge of woven and knitted fabric. Also having Able to Analyze the types of fabric.. 	<p>Understand the fabric quantity and cutting stock quantity of fabric</p> <ul style="list-style-type: none"> Ability to do and check right assessment for fabric and cut quantity stock placement area. 	15	<ul style="list-style-type: none"> Fabric of different types knits, woven etc. 	Workshop/workplace
LU-4 Specify the types and name of machines	Understand the types of machine whether lock stitch and chain stitch.	<ul style="list-style-type: none"> Knowledge of Machines used in Industry. 	15	<ul style="list-style-type: none"> Different type of stitching machines Single needle Double needle Waistband 	Workshop/workplace

	Able to check the machine requirement	<ul style="list-style-type: none"> Ability to operate the Machines. 		<ul style="list-style-type: none"> Bartack Feed of arm 	
LU-5 Arrange the equipment according to the required process	<p>Understand the concept of Man, Machine and Material.</p> <p>Able to manage man, machine, material according to requirement.</p>	<ul style="list-style-type: none"> Knowledge of equipment (number of Labor, machines quantity, material according to that manpower and machines.) used in the process. Ability to do arrange all type of equipment in time by using available resources efficiently 	20	<ul style="list-style-type: none"> Different type of stitching machines Single needle Double needle Waistband Feed of arm Bartack 	Workshop/workplace
LU-6 Specify the operations sequence of product and also categorize them.	<p>Understand the garment operations</p> <p>Able to make good sequence of machines and operations</p>	<ul style="list-style-type: none"> Knowledge of garment on which he is working. Ability to do correct calculations for getting right results. 	25	<ul style="list-style-type: none"> Trouser Pant Polo Shirt Crew Neck Shirt Hood Jacket 	Workshop/workplace
LU-7 Identify the washing area	<p>Understand the Average order washing quantity per month and per day.</p> <p>Able to Analyze area capacity.</p>	<ul style="list-style-type: none"> Knowledge of Machines used in washing of garment. Ability to adjust machines in right areas. 	10	<p>Washed garments.</p> <ul style="list-style-type: none"> Trouser Pant Polo Shirt Crew Neck Shirt Hood Jacket 	Workshop/workplace
LU-9 Identify the process of finishing and packing	<p>Understand the Finishing operations in garment.</p> <p>Able to Analyze the area capacity for finishing.</p>	<ul style="list-style-type: none"> Knowledge of finishing equipment used in finishing department. Ability to adjust required equipment according to need. 	15	<ul style="list-style-type: none"> Packing material Tag poly bag carton etc. 	Workshop/workplace
LU-10	Understand the	<ul style="list-style-type: none"> Knowledge of sizes of 	10	<ul style="list-style-type: none"> Calculator 	Workshop/workplace

Identify the capacity of ware house with required tools and materials	quantity and number of order packed per month and per day. Able to Analyze the area capacity for warehouse.	equipment required in warehouse. • Ability to calculate right capacity of warehouse.			
---	--	---	--	--	--

Module 3 Title: Perform capacity study

Objective of the Module: Get understanding to develop competency to how to Perform capacity study.

Duration: 55 hours

Theory: 20 hours

Practice: 35 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Calculate the SAM (standard allowed minutes) of product	Understand the Concept of SAM. Able to perform the right job in time	<ul style="list-style-type: none"> • Knowledge of garment of which SAM is being calculated. • Ability to give exact rating during calculating the SAM. 	20	<ul style="list-style-type: none"> • Stop watch • Calculator 	Workshop/workplace
LU-2 Conduct the Time and motion study	Understand the concept of Time and Motion Study Able to Analyze the comfortability of the operator.	<ul style="list-style-type: none"> • Knowledge of all elements involve in Time and Motion Study. • Ability to Check the Operational process deeply. 	25	<ul style="list-style-type: none"> • Writing pad, • Stop watch • Calculator 	Workshop/workplace
LU-3 Plan to repeat this practice internally	Understand the Importance of Time & Motion Study. Able to make the plan on daily and monthly basis for said working	<ul style="list-style-type: none"> • Knowledge of garment on which Time and Motion study is going on. • Ability to check the results and improvements coming through the process of Time and Motion Study. 	10	<ul style="list-style-type: none"> • Writing pad, • Stop watch • Calculator 	Workshop/workplace

Module 4 Title: Coordinate with other departments

Objective of the Module: Get understanding to develop competency of Coordination with other departments.

Duration: 30 hours

Theory: 20 hours

Practice: 10 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Identify and communicate the Requirements to the concerned departments.	Understand the Work requirement. Able to realize requirement of concerned departments.	<ul style="list-style-type: none"> • Knowledge of Technical complications that to be discussed with concerned departments. • Ability to convince and provide proper guidance on relevant issue. 	10	<ul style="list-style-type: none"> • Work station 	Workshop/workplace
LU-2 Arrange meetings as per requirements with concerned departments	Understand the concept of Time and Motion Study Able to Analyze the comfortability of the operator.	<ul style="list-style-type: none"> • Knowledge of all elements involve in Time and Motion Study. • Ability to Check the Operational process deeply. 	10	<ul style="list-style-type: none"> • Trouser • Pant • Polo Shirt • Crew Neck Shirt • Hood • Jacket 	Workshop/workplace
LU-3 Plan to repeat this practice internally	Understand the Importance of Time & Motion Study. Able to make the plan on daily and monthly basis for said working	<ul style="list-style-type: none"> • Knowledge of garment on which Time and Motion study is going on. • Ability to check the results and improvements coming through the process of Time and Motion Study. 	10	<ul style="list-style-type: none"> • Work Station 	Workshop/workplace

Module 5 Title: Perform Training and Development

Objective of the Module: Get understanding to develop competency to Perform Training and Development

Duration: 170 hours

Theory: 110 hours

Practice: 60 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Maintain Discipline & Operator Training	Understand the concept of Discipline Training of operator. Able to implement discipline training of operator.	<ul style="list-style-type: none"> • Knowledge of Laws of Discipline • Ability to check the results and observe the improvement come through the implementation. 	20	<ul style="list-style-type: none"> • Work Station 	Workshop/workplace
LU-2 Use training aids	Understand the types of training aids. Able to check the availability of these aids.	<ul style="list-style-type: none"> • Knowledge of machine and garment for which training aids will be used. • Ability to check the benefits of using these training aids. 	10	<ul style="list-style-type: none"> • Folder of different sizes • guides 	Workshop/workplace
LU-3 Select the right person for right job	Understand the job to be done. Able to ensure the right person for right job.	<ul style="list-style-type: none"> • Knowledge of job/operation and skill level Criteria. • Ability to do analyses for checking the improvements. 	10	<ul style="list-style-type: none"> • Work Station 	Workshop/workplace
LU-4 Maintain documentation	Understand the documentation process Able to ensure right	<ul style="list-style-type: none"> • Knowledge of all types of documents used to complete the documentation process. 	15	<ul style="list-style-type: none"> • Record register 	Workshop/workplace

	documentation for relevant job.	<ul style="list-style-type: none"> Ability to make ready good record all the time when it is needed. 			
LU-5 Develop trainee for required efficiency level	<p>Understand the concept of efficiency.</p> <p>Able to develop methods for required efficiency.</p>	<ul style="list-style-type: none"> Knowledge of job/operation for which efficiency is required. Ability to implement the methods required for efficiency level. 	20	<ul style="list-style-type: none"> Stop watch Calculator 	Workshop/workplace
LU-6 Transfer trained operator to production department	<p>Understand the efficiency level of operator.</p> <p>Able to operate the Machine.</p>	<ul style="list-style-type: none"> Knowledge of Job/Operation on which operator is trained. Ability to train the operator on required efficiency level. 	25	<ul style="list-style-type: none"> Stop watch Calculator Garment. 	Workshop/workplace
LU-7 Develop methods	<p>Understand concept methods required for required job/operation</p> <p>Able to develop new methods to do job by saving time</p>	<ul style="list-style-type: none"> Knowledge of job/operation for which new method is developed. Ability to check the advantages and disadvantages of new method before when it will work on. 	10	<ul style="list-style-type: none"> Work Station 	Workshop/workplace
LU-8 Improve existing methods	<p>Understand the things lacking in existing method.</p> <p>Able to analysis the improvement required in existing methods.</p>	<ul style="list-style-type: none"> Knowledge of garment for which existing method is going to improve. Ability to measure the results difference 	5	<ul style="list-style-type: none"> Work Station 	Workshop/workplace

		between currently and previously.			
LU-9 Follow up trained operators for methods and specs.	Understand the operators and operations on which operator have been trained. Able to keep efficiency and DHU record of relevant operators.	<ul style="list-style-type: none"> • Knowledge of measurement parameters and production machines. • Ability to produce productive manpower for maximum output. 	10	<ul style="list-style-type: none"> • Work Station 	Workshop/workplace
LU-10 Maintain housekeeping.	Understand the concept of house keeping. Able to convince for better results by good housekeeping.	<ul style="list-style-type: none"> • Knowledge of 6s of housekeeping. • Ability to implement the 6s of housekeeping. 	20	<ul style="list-style-type: none"> • Work station 	Workshop/workplace
LU-11 Develop SOPs (standard operating procedures)	Understand the concept of training and development. Able to know the responsibilities of relevant persons.	<ul style="list-style-type: none"> • Knowledge of parameters required for the development of SOPs. • Ability to develop SOPs according to the required job. 	10	<ul style="list-style-type: none"> • Work station 	Workshop/workplace
LU-12 Develop job descriptions	Understand the concept of training and development. Able to define responsibilities.	<ul style="list-style-type: none"> • Knowledge of department for which job description is being explained. • Ability to check responsibilities according to the job/working to be done. 	15	<ul style="list-style-type: none"> • Record register 	Workshop/workplace

Module 6 Title: Ensure quality improvements.

Objective of the Module: Get understanding to develop competency how to ensure quality improvements.

Duration: 20 hours

Theory: 10 hours

Practice: 10 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Select right machines for right Operations.	Understand the operation and machine type. Able to analysis the product/garment deeply.	<ul style="list-style-type: none"> • Knowledge of all machine used in garment industry. • Ability to sew the garment by self. 	10	<ul style="list-style-type: none"> • Single needle lock stitch machine • Double needle lock stitch machine • Waist band machine • Bartack machine • Feed of arm machine 	Workshop/workplace
LU-2 Proper use of work aids.	Understand the concept of work aids. Able to confortibility level.	<ul style="list-style-type: none"> • Knowledge of work aids that can be used like folder, guides, trolleys etc. • Ability to Check the results by using these work aids. 	10	<ul style="list-style-type: none"> • Work station 	Workshop/workplace

Module 7 Title: Calculate Material Efficiency.

Objective of the Module: Get understanding to develop competency to calculate material efficiency.

Duration: 15 hours

Theory: 10 hours

Practice: 5 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Select right materials.	Understand the type of material. Able to analyze the product/ garment for which he is going to do material selection.	<ul style="list-style-type: none"> • Knowledge of material required for product/ garment. • Ability to check the material according to required standard. 	5	Calculator Material Detail	Workshop/workplace
LU-2 Check wastage of material.	Understand the waste margin to be given. Ability to set the parameters for waste.	<ul style="list-style-type: none"> • Knowledge of material consumptions of product. • Able to do right calculations for checking the material waste.. 	5	Calculator Material Detail	Workshop/workplace
LU-3 Prevention of wastage by controlling methods and machines.	Understand the controlling methods. Able to introduce new developments to control the waste.	<ul style="list-style-type: none"> • Knowledge of machines and work aids. • Ability to check the methods standard for better improvement. 	5	Calculator Material Detail	Workshop/workplace

Module 8 Title: Occupational Health and Safety.

Objective of the Module: Get understanding to develop competency of occupational health and safety.

Duration: 55 hours

Theory: 35 hours

Practice: 20 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Develop evacuation plan	Understand the workplace area. Able to develop evacuation police and procedures.	<ul style="list-style-type: none"> • Knowledge of evacuation routes and exit. • Ability to establish evacuation routes and exit. 	10	Handouts	Workshop/workplace
LU-2 Identify and control hazards	Understand the concept of hazards Able to make a effective plan	<ul style="list-style-type: none"> • Knowledge of types of hazards. • Ability to develop and implement policy and procedures. 	20	Handouts	Workshop/workplace
LU-3 Train workers for evacuation	Understand the workers strength. Able to plan the training sessions.	<ul style="list-style-type: none"> • Knowledge of equipment required for training. • Ability to operate and use the equipment. 	10	<ul style="list-style-type: none"> • Work Station 	Workshop/workplace
LU-4 Train workers for first aid	Understand the requirement of first aid. Able to plan area for first aid.	<ul style="list-style-type: none"> • Knowledge of first aid material. • Ability to give training for use the material first aid. 	15		Workshop/workplace

Module 9 Title: Process Design

Objective of the Module: Get understanding to develop competency to process design.

Duration: 60 hours

Theory: 40 hours

Practice: 20 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Check the cutting layout capacity (area calculation)	Understand the workplace for cutting. Able to show the cutting capacity on cutting area.	<ul style="list-style-type: none"> • Knowledge of types of layout. • Ability to introduce new layout to improve the production and also check the results through right calculations. 	15	<ul style="list-style-type: none"> • Work station 	Workshop/workplace
LU-2 Check work in process layout capacity(cutting, sewing and finishing)	Understand the concept of work in process. Able to check capacity of relevant department under define layout.	<ul style="list-style-type: none"> • Knowledge of different production systems. • Ability to smooth running of WIP in define layout. 	15	<ul style="list-style-type: none"> • Work station 	Workshop/workplace
LU-3 Provide patterns for tracing and pressing.	Understand size of pattern required for tracing and pressing.. Able to select the right pattern for right size.	<ul style="list-style-type: none"> • Knowledge of equipment/ tools required for pattern making. • Ability to check patterns according to the standard given by customer. 	15	Hard Patterns	Workshop/workplace
LU-4 Provided style bulletin	Understand the concept of style	<ul style="list-style-type: none"> • Knowledge of elements required for style 	15		Workshop/workplace

	bulletin. Able to analyze the garment of that style bulletin is being prepared	bulletin. • Ability to have computer skill to prepare a style bulletin.			
--	---	--	--	--	--

Module 10 Title: Develop Work Aids**Objective of the Module:** Get understanding to develop competency of work aids developments.**Duration: 20 hours****Theory: 10 hours****Practice: 10 hours**

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Provide supporting materials (folders, edge guides , racks , trolleys etc)	Understand the layout using to make the product. Able to increase efficiency motive.	<ul style="list-style-type: none">• Knowledge of types of garment.• Ability to use work aids to take maximum out.	10	<ul style="list-style-type: none">• folders,• edge guides• racks• trolleys etc	Workshop/workplace
LU-2 Check confortibility	Understand the skill level of operators. Able to check relaxation level of operator.	<ul style="list-style-type: none">• Knowledge of height of machine, stools etc. for working.• Ability to develop different work aids to promote output level of operator.	10	<ul style="list-style-type: none">• Work station	Workshop/workplace

Module 11 Title: Manage Resources

Objective of the Module: Get understanding to develop competency how to manage resource.

Duration: 35 hours

Theory: 25 hours

Practice: 10 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Calculate required man power	Understand the order quantity. Able to fix the target.	<ul style="list-style-type: none"> • Knowledge shipment dates. • Ability to use right mathematics to calculate exact manpower. 	15	<ul style="list-style-type: none"> • Writing pad • Calculator 	Workshop/workplace
LU-2 Specify required lighting arrangements	Understand the workplace area. Able to analyze the light required to perform the job for operator easily.	<ul style="list-style-type: none"> • Knowledge of light in lux. • Ability to develop different work aids to promote output level of operator. 	10	Tube lights	Workshop/workplace
LU-3 Calculate space consumption (Work in process ,cutting ,stitching)	Understand the capacity are for working. Able to select right area for working.	<ul style="list-style-type: none"> • Knowledge of mathematics for calculations. • Ability to calculate right space consumption. 	10	Calculator	Workshop/workplace

Module 12 Title: Plan Preventive Maintenance

Objective of the Module: Get understanding to develop competency how to plan preventive maintenance.

Duration: 40 hours

Theory: 30 hours

Practice: 10 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Oil machines	Understand the types of machines. Able to check the required machine oil.	<ul style="list-style-type: none"> Knowledge of oil type that machine required. Ability to check the oil quality according to the standard. 	10	Machine Oil	Workshop/workplace
LU-2 Set needle gauge	Understand the requirement of customer. Able to measure the needle gauge upto the standard.	<ul style="list-style-type: none"> Knowledge of needle gauge measurement. Ability to check the results. 	10	<ul style="list-style-type: none"> Needle gauge Needle 	Workshop/workplace
LU-3 Reserve machines	Understand the capacity of machine in the area. Able to check the productivity level.	<ul style="list-style-type: none"> Knowledge of types of machines. Ability to adjust the machines according to the operations. 	5	Machines	Workshop/workplace
LU-4 Keep machine record	Understand concept of bookkeeping. Able to fulfill the requirement of book keeping	<ul style="list-style-type: none"> Knowledge of bookkeeping. Ability to maintain good record of all machines in factory. 	5	<ul style="list-style-type: none"> Record Register Office files 	Workshop/workplace
LU-5 Adjust safety guard on machines	Understand the importance of safety guards.	<ul style="list-style-type: none"> Knowledge of safety guards used and required on machines. 	10	<ul style="list-style-type: none"> Needle guard Eye guard 	Workshop/workplace

	Able to highlight the importance of safetyguards on machines	<ul style="list-style-type: none">• Ability to check the safety guards on machines to ensure the safety of employees.			
--	--	---	--	--	--

Module 13 Title: Develop Professionalism

Objective of the Module: Get understanding to develop competency of professionalism.

Duration: 25 hours

Theory: 20 hours

Practice: 5 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
<p>LU-1 Participate in Training</p>	<p>Understand the importance of training</p> <p>Able and motivated to participate in training</p>	<ul style="list-style-type: none"> • Knowledge of advantages of getting technical and professional trainings • Ability to participate in training actively and motivated 	<p>10</p>	<ul style="list-style-type: none"> • Handouts • Case studies • Role play sheets • Activity sheets 	<p>Workshop/workplace</p>
<p>LU-2 Interact with colleagues</p>	<p>Understand the social norms in a factory</p> <p>Able to interact with colleagues effectively and constructively</p>	<ul style="list-style-type: none"> • Explain and demonstrate effective communication skills and interaction with colleagues 	<p>5</p>	<ul style="list-style-type: none"> • Handouts • Case studies • Role play sheets • Activity sheets 	<p>Workshop/workplace</p>

<p>LU-3 Consult with experts</p>	<p>Able to take guidance from experts / seniors</p>	<ul style="list-style-type: none"> • Explain how to take guidance from experts/seniors 	<p>5</p>	<ul style="list-style-type: none"> • Handouts • Case studies • Role play sheets • Activity sheets 	<p>Workshop/workplace</p>
<p>LU-4 Participate in skill test/competition</p>	<p>Understand the importance of the skill test for future growth/career</p> <p>Able to participate in skill test/competition</p>	<ul style="list-style-type: none"> • Explain the importance of evaluation by skill test/competition for further training and development 	<p>5</p>	<ul style="list-style-type: none"> • Handouts • Case studies • Role play sheets • Activity sheets 	<p>Workshop/workplace</p>

Module 14 Title: Observe Occupational health and safety practices

Objective of the Module: Get understanding to develop competency how to observe occupational health and safety practices.

Duration: 25 hours

Theory: 20 hours

Practice: 5 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Observe health, safety and security Related procedures.	Understand and apply the principles of occupational health and safety practices in a company	<ul style="list-style-type: none"> Explain and demonstrate occupation, health and safety practices working at a station 	10	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace
LU-2 Follow workplace health safety and security requirements	Recognize and explain workplace health safety and security requirements	<ul style="list-style-type: none"> Explain and demonstrate workplace health, safety and security requirement 	5	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace
LU-3 Follow of planning , organizing and safe work techniques	Understand planning and organizing the safe work techniques	<ul style="list-style-type: none"> Explain about safe work techniques 	5	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace
LU-4 Deal with hazardous or emergency Situations	Able to deal with the hazardous or emergency situations when arise	<ul style="list-style-type: none"> Demonstrate to deal with the hazardous or emergency situations 	5	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace

Module 15 Title: Communicate with co-workers effectively

Objective of the Module: Get understanding to develop competency to Communicate with co-workers effectively.

Duration: 20 hours

Theory: 15 hours

Practice: 5 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Adopt effective Communication and behaviour with co-workers.	Understand the concept of effective communication and conducive behavior with co-workers	<ul style="list-style-type: none"> Explain about communication channels and its importance for conducive behavior with co-workers 	10	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace
LU-2 Interpret work related instructions correctly	Understand and interpret work related instructions accurately as required	<ul style="list-style-type: none"> Explain work related instruction correctly 	5	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace
LU-3 Produce reports and prepare work related documents in a proper form.	Able to produce reports and required work related documents as per requirement	<ul style="list-style-type: none"> Explain report writing skills as per requirements 	5	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace

Module 16 Title: Work in a Team

Objective of the Module: Get understanding to develop competency of team work.

Duration: 15 hours

Theory: 10 hours

Practice: 5 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Perform duties and responsibilities in a positive manner	Understand the job duties and responsibilities so as to cooperate with co-workers effectively	<ul style="list-style-type: none"> Explain job description form and its link with co-workers for good relationship. 	3	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace
LU-2 Seek assistance from co-workers when difficulties arise	Explain problem solving and conflict resolution techniques Able to seek assistance from peers in difficulties for their solution	<ul style="list-style-type: none"> Understand the problem solving and conflict resolution techniques 	2	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace
LU-3 Respect difference in personal beliefs and values	Understand the ethical and cultural norms with in a factory Able to respect beliefs and values	<ul style="list-style-type: none"> Explain about ethical standards and social norms which working in a factory 	3	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace

	of co-workers which working				
LU-4 Contribute to group work activities	Able to understand the concept of team work Able to contribute in group work activities	<ul style="list-style-type: none"> • Explain benefits of team work and its application with in factory 	2	<ul style="list-style-type: none"> • Handouts • Case studies • Role play sheets • Activity sheets 	Workshop/workplace
LU-5 Share information related to group members	Able to share correct information while working with group members	<ul style="list-style-type: none"> • Explain importance of sharing of information and disadvantages of incorrect information 	2	<ul style="list-style-type: none"> • Handouts • Case studies • Role play sheets • Activity sheets 	Workshop/workplace
LU-6 Provide support to achieve organizational goals	Be able to support the organizational objectives for better results	<ul style="list-style-type: none"> • Explain responsibilities to support organizational objectives for better results. 	3	<ul style="list-style-type: none"> • Handouts • Case studies • Role play sheets • Activity sheets 	Workshop/workplace

Module 17 Title: Manage Time

Objective of the Module: Get understanding to develop competency how to manage the time effectively.

Duration: 20 hours

Theory: 15 hours

Practice: 5 hours

Learning Unit	Learning Outcome	Learning Elements	Duration (Hours)	Material Required	Learning Place
LU-1 Manage time to complete the assigned work	Able to understand self management and time management skills Able to management time as per the requirement	<ul style="list-style-type: none"> Explain time management and self management skills 	4	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace
LU-2 Manage work load as required by the management	Able to understand the work load management techniques as per the requirement	<ul style="list-style-type: none"> Explain work load management techniques 	4	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace
LU-3 Prioritize tasks	Able to prioritize the task i.e. high, medium and low priority tasks.	<ul style="list-style-type: none"> Explain importance and methods of task prioritization at work place 	4	<ul style="list-style-type: none"> Handouts Case studies Role play sheets Activity sheets 	Workshop/workplace

<p>LU-4 Meet the specified deadlines</p>	<p>Able to meet the required and specified deadlines of a task</p>	<ul style="list-style-type: none"> • Explain how to meet the required and specified deadline of a task 	<p>4</p>	<ul style="list-style-type: none"> • Handouts • Case studies • Role play sheets • Activity sheets 	<p>Workshop/workplace</p>
<p>LU-5 Handle the co-workers</p>	<p>Able to handle co-workers by using effective time management techniques</p>	<ul style="list-style-type: none"> • Explain how to handle co-workers with effective time management for better coordination and productivity 	<p>4</p>	<ul style="list-style-type: none"> • Handouts • Case studies • Role play sheets • Activity sheets 	<p>Workshop/workplace</p>

Course Name Curriculum Assessment

Module 1 Title: Perform product analysis

Objective of the Module: Get understanding to develop competency to get understanding of performing product analysis.

Duration: 25 hours

Theory: 10 hours

Practice: 15 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M1-LU-1 Select the product	10		<p>Trainee will:</p> <p>Explain the product Name like trouser, basic pant, crew neck shirt, jacket, polo shirt.</p> <p>Describe purpose to select the product because it should be clear that knitted or woven.</p> <p>Demonstrate how to do right selection because you should be aware about the construction techniques of woven and knitted fabric.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M1-LU-2 Identify the type of product	10		<p>Trainee will:</p> <p>Explain the various types of product like as basic, semi fashion and fashion.</p> <p>Describe the type to identify the product.</p> <p>Demonstrate how to identify the type of product as fashion or semi fashion.</p>		
M1-LU-3 Do operational analysis (cut to pack)	5		<p>Trainee will:</p> <p>Explain the cutting and stitching and packing requirements of product as cutting margins, stitching specs and packing material as per order.</p>		

			<p>Describe the operations involves in garment.</p> <p>Demonstrate the operations sequence to completely ease completion of product.</p>		
--	--	--	--	--	--

Module 2 Title: Perform Layout Planning

Objective of the Module:Get understanding to develop competency to how to perform lay out planning.

Duration: 135 hours

Theory: 85 hours

Practice: 50 hours

Learning Unit	Theory Days/h ours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M2-LU-1 Identify the spreading and cutting area in Cutting department.	15		Trainee will: Explain the Types of spreading and cutting to clear the process like manual or auto. Describe mathematics formula calculate the cutting and spreading area covered.	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
	15		Demonstrate implementation of this mathematics to check the results. Trainee will: Explain the numbering and bundling process. Describe the place where bundle will be adjusted as on pallets or in racks etc. Demonstrate about the racks will be use for placement.		
M2-LU-2 Identify the numbering and bundling area required process					
M2-LU-3 Identify the fabric and cutting stock area	15		Trainee will: Explain about the fabric and cutting quantity requirements according to order. Describe the place where bundle will be	<ul style="list-style-type: none"> • Oral • Practical/ 	

			stocked. Demonstrate about the racks will be use for placement.	Demonstration <ul style="list-style-type: none"> • MCQs • Written test 	
M2-LU-4 Specify the types and name of machines	15		Trainee will: Explain different types of machines like lock stitch and chain stitch to complete the garment. Describe about the quantity of machines required for completing the order of product. Demonstrate to operate the machine as per standard methods.	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M2-LU-5 Arrange the equipment according to the	20		Trainee will: Explain this specific type of garment to define the required equipment. Describe the typed of equipment required for completion of garment like machinery, clippers, scissors. Demonstrate about the precautionary measures adopt during using the relevant equipment to remain safe like glove, mask, shoes etc.	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M2-LU-6 Specify the operations sequence of product and also categorize them.	15		Trainee will: Explain the categories of product/garment as small parts, back section, assembly to make the garment easy in bulk. Describe operations names in sequence for	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration 	

			completion of garment.	<ul style="list-style-type: none"> • MCQs • Written test 	
M2-LU-7 Identify the washing area	15		<p>Explain about the washing machine volume to cover the area in width, length, and height.</p> <p>Describe formula to calculating the washing area by checking the volume of machines.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M2-LU-8 Identify the required washing process of product	15		<p>Trainee will:</p> <p>Explain types of washing of garment to wash the product according to order.</p> <p>Describe specific type of washing for in hand garment.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M2-LU-9 Identify the process of finishing and packing	10		<p>Trainee will:</p> <p>Explain the finishing and packing operations of garment.</p> <p>Describe operation sequence in finishing and packing to complete the process of packing and finishing easily in bulk.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M2-LU-10 Identify the capacity of ware house with required tools and materials	10		<p>Trainee will:</p> <p>Explain the Customer order quantity to fix the area of warehouse.</p> <p>Describe tools required in warehouse.</p>		

Module 3 Title: Perform capacity study

Objective of the Module: Get understanding to develop competency to how to Perform capacity study.

Duration: 55 hours

Theory: 20 hours

Practice: 35 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M3-LU-1 Calculate the SAM (standard allowed minutes) of product	30		<p>Trainee will:</p> <p>Explain the concept of SAM to understand it.</p> <p>Describe elements of SAM to solve it.</p> <p>Demonstrate the formula through practical to calculate the SAM.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M3-LU-2 Conduct the Time and motion study	15		<p>Trainee will:</p> <p>Explain the element involved in Time and motion study like pick, align under the presser foot, sew and then dispose.</p> <p>Describe the purpose of time study to implement it in production.</p> <p>Demonstrate the method of time and motion study to obtain the required results.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M3-LU-3 Plan to repeat this practice internally	10		<p>Trainee will:</p> <p>Explain the importance of Time and motion study to repeat it.</p> <p>Describe the plan to repeat the practice of time and motion study in a day/week/month.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

Module 4 Title: Coordinate with other departments

Objective of the Module: Get understanding to develop competency of Coordination with other departments

Duration: 30 hours

Theory: 20 hours

Practice: 10 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M4-LU-1 Identify and communicate the Requirements to the concerned departments.	10		<p>Trainee will:</p> <p>Explain the departments to whom it may concern.</p> <p>Describe purpose of coordination to solve the coming problem in garment.</p> <p>Demonstrate by arranging a meeting to make its preparation easy.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M4-LU-2 Arrange meetings as per requirements with concerned departments	10		<p>Trainee will:</p> <p>Explain the product of customer.</p> <p>Describe the time of meeting about the product.</p> <p>Demonstrate through working to meet the parameters of garment or product.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M4-LU-3 Plan to repeat this practice internally	10		<p>Trainee will:</p> <p>Explain the importance of coordination with other department.</p> <p>Describe the plan to repeat the practice of meeting in a day or in a week.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

Module 5 Title: Perform Training and Development

Objective of the Module: Get understanding to develop competency to Perform Training and Development

Duration: 170 hours

Theory: 110 hours

Practice: 60 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M5-LU-1 Maintain Discipline & Operator Training	15		<p>Trainee will:</p> <p>Explain the importance of discipline and training of operators to improve their habits.</p> <p>Describe the elements under cover the discipline to increase their efficiency level.</p> <p>Demonstrate the purpose of operator training and discipline to motivate them.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M5-LU-2 Use training aids	10		<p>Trainee will:</p> <p>Explain the training aids make the work or operation easy.</p> <p>Describe the importance of these training aids.</p> <p>Demonstrate to apply them to get results.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M5-LU-3 Select the right person for right job	15		<p>Trainee will:</p> <p>Explain the job/work to do</p> <p>Describe criteria to perform the job.</p> <p>Demonstrate the method for selection.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M5-LU-4 Maintain documentation	10		<p>Trainee will:</p> <p>Explain the required documents as daily attendance, worksheet, training graph, capacity study sheet.</p>	<ul style="list-style-type: none"> • Oral • Practical/ 	

			Describe the process to complete the file of a candidate. Demonstrate the Filing process.	Demonstration <ul style="list-style-type: none"> • MCQs • Written test 	
M5-LU-5 Develop trainee for required efficiency level	15		Trainee will: Explain the operation/job for required efficiency level. Describe the required efficiency level to achieve it. Demonstrate the training process to make it easy in achievement.	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M5-LU-6 Transfer trained operator to production department	15		Trainee will: Explain the job or operation on which training is being completed. Describe the Training graph. Demonstrate the process of transfer of trainee into production line.	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M5-LU-7 Develop methods	15		Trainee will: Explain the product to be produced as trouser or basic pant or jacket etc. Describe the methodology to do the job or operation. Demonstrate the level of easiness for producer or operator to use maximum potential.	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M5-LU-8 Improve existing methods	15		Trainee will: Explain the lacking in existing methods. Describe the route to improve them.	<ul style="list-style-type: none"> • Oral • Practical/ 	

				<p>Demonstration</p> <ul style="list-style-type: none"> • MCQs • Written test 	
<p>M5-LU-9 Follow up trained Operators for methods and specs.</p>	15		<p>Trainee will:</p> <p>Explain the jobs/operations and operators working in production to follow them.</p> <p>Describe their efficiency level in line to improve it.</p> <p>Demonstrate route to improve them if any required.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
<p>M5-LU-10 Maintain housekeeping.</p>	15		<p>Trainee will:</p> <p>Explain the importance of housekeeping to implement it.</p> <p>Describe the benefits of good housekeeping to get maximum results.</p> <p>Demonstrate the 6s of housekeeping to motivate them.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
<p>M5-LU-11 Develop SOPs (standard operating procedures)</p>	15		<p>Trainee will:</p> <p>Explain the purpose of standard operating procedures to develop it.</p> <p>Describe the method to develop these standards.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
<p>M5-LU-12 Develop job descriptions</p>	15		<p>Trainee will:</p> <p>Explain the responsibilities of training department.</p> <p>Describe the designation of concerned persons covering responsibilities in these SOP's.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

Module 6 Title: Ensure quality improvements.

Objective of the Module: Get understanding to develop competency how to Ensure quality improvements.

Duration: 20 hours

Theory: 10 hours

Practice: 10 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M6-LU-1 Select right machines for right Operations.	10		Trainee will: Explain the machine required to perform the operation. Describe the type of operation stitch type like lock or chain stitch for right selection. Demonstrate the operation by operating the machine.	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M6-LU-2 Proper use of work aids.	10		Trainee will: Explain the type work aid requirement like folder or guides to do operation easily. Describe their implementation according to requirement.	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

Module 7 Title: Calculate Material Efficiency.

Objective of the Module: Get understanding to develop competency to calculate material efficiency.

Duration: 15 hours

Theory: 10 hours

Practice: 5 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M7-LU-1 Select right materials.	5		<p>Trainee will:</p> <p>Explain the type of material for garment like fabric is twill, denim, or knitted and also threads and other accessories.</p> <p>Describe the selection of material for concerned garment.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M7-LU-2 Check wastage of material.	5		<p>Trainee will:</p> <p>Explain the wastage like about fabric other accessories to fix it.</p> <p>Describe the method to check the wastage either in shape of fabric or accessories material.</p> <p>Demonstrate the method to check the wastage.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M7-LU-3 Prevention of wastage by controlling methods and machines.	5		<p>Trainee will:</p> <p>Explain the methods and machines wastage in shape of machines faults or due to wrong methods.</p> <p>Describe preventions to control the waste like by using extra machines or by adopting wrong methods.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

Module 8 Title: Occupational Health and Safety.

Objective of the Module: Get understanding to develop competency of occupational health and safety.

Duration: 55 hours

Theory: 35 hours

Practice: 20 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M8-LU-1 Develop evacuation plan	15		Trainee will: Explain evacuation plan. Describe the types of evacuation plan to take initial steps. Demonstrate the implementation of evacuation plan.	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M8-LU-2 Identify and control hazards	10		Trainee will: Explain types of hazards. Describe evacuation plan to minimize the destructions of these hazards.	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M8-LU-3 Train workers for evacuation	15		Trainee will: Explain the importance to provide training for evacuation to workers. Describe the type of training to be given. Demonstrate the training to workers.	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

M8-LU-4 Train workers for first aid	15		<p>Trainee will:</p> <p>Explain the importance of training for first aid to give training.</p> <p>Describe the circumstances in which first aid is required.</p> <p>Demonstrate to workers for training.</p>	<ul style="list-style-type: none"> • Oral • Practical/ • Demonstration • MCQs • Written test 	

Module 9 Title: Process Design

Objective of the Module: Get understanding to develop competency of process design.

Duration: 60 hours

Theory: 40 hours

Practice: 20 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M9-LU-1 Check the cutting layout capacity (area calculation)	15		<p>Trainee will:</p> <p>Explain the required cutting capacity to meet the requirement.</p> <p>Describe the daily cutting target to achieve it.</p> <p>Demonstrate the formula to calculate the required cutting area and to check it.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M9-LU-2 Check work in process layout capacity(cutting, sewing and finishing)	15		<p>Trainee will:</p> <p>Explain the line balancing to balance the line.</p> <p>Describe the rules of line balancing to achieve maximum results.</p> <p>Demonstrate in sewing and finishing area to balance the line.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs Written test 	
M9-LU-3 Provide patterns for tracing and pressing.	15		<p>Trainee will:</p> <p>Explain the types of patterns.</p> <p>Describe the sizes of patterns for tracing and pressing.</p> <p>Demonstrate the method for tracing and pressing.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs Written test 	
M9-LU-4 Provided style bulletin	15		<p>Trainee will:</p> <p>Explain the importance of style bulletin.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration 	

			Describe the order # for which style bulletin is being prepared. Demonstrate the preparation of style bulletin by using computer in excel.	<ul style="list-style-type: none">• MCQs Written test	
--	--	--	---	---	--

Module 10 Title: Develop Work Aids

Objective of the Module: Get understanding to develop competency of work aids developments

Duration: 20 hours

Theory: 10 hours

Practice: 10 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
<p>M10-LU-1 Provide supporting materials (folders, edge guides , racks , trolleys etc)</p>	<p>10</p>		<p>Trainee will:</p> <p>Explain the required supporting material to complete the garment.</p> <p>Describe the benefits of supporting material to improve efficiency level of operator and also material.</p> <p>Demonstrate the adjustment of this supporting material in production to get maximum results.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	<p>At the end of the module</p>
<p>M10-LU-2 Check confortibility</p>	<p>10</p>		<p>Trainee will:</p> <p>Explain the level of comfort ability to performing the operation.</p> <p>Describe the method to check it.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

Module 11 Title: Manage Resources

Objective of the Module: Get understanding to develop competency how to manage resource.

Duration: 35 hours

Theory: 25 hours

Practice: 10 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M11-LU-1 Calculate required man power	10		<p>Trainee will:</p> <p>Explain the order shipment date and order quantity.</p> <p>Describe the type of manpower like skilled or unskilled.</p> <p>Demonstrate the formula to calculate the required manpower required to complete the order.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M11-LU-2 Specify required lighting arrangements	15		<p>Trainee will:</p> <p>Explain the types of lights like in shape on energy savers or tube lights to implement it.</p> <p>Describe the place of their utilization.</p> <p>Demonstrate by checking the quality of garment in this light.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M11-LU-3 Calculate space consumption (Work in process ,cutting ,stitching)	10		<p>Trainee will:</p> <p>Explain the customer requirements to meet them.</p> <p>Describe the type of area required for cutting to finishing & packing.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

Module 12 Title: Plan Preventive Maintenance

Objective of the Module: Get understanding to develop competency how to plan preventive maintenance.

Duration: 40 hours

Theory: 30 hours

Practice: 10 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M12-LU-1 Oil machines	10		<p>Trainee will:</p> <p>Explain the type of machine and importance of oiling in machine to avoid jam of machine.</p> <p>Describe the required oil level in Machine to increase its productivity.</p> <p>Demonstrate how to oiling in the machine.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M12-LU-2 Set needle gauge	10		<p>Trainee will:</p> <p>Explain the type of needle gauge to.</p> <p>Describe the size of needle gauge.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M12-LU-3 Reserve machines	5		<p>Trainee will:</p> <p>Explain the plan target per day and per week and per month to achieve and to follow it.</p> <p>Describe the number of machines reserve in case of any urgency or emergency.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M12-LU-4 Keep machine record	10		<p>Trainee will:</p> <p>Explain importance of record keeping to do it.</p> <p>Describe the method of keeping good record to get results.</p> <p>Demonstrate to keep record keeping.</p>	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M12-LU-5	5		<p>Trainee will:</p>	<ul style="list-style-type: none"> • Oral 	

<p>Adjust safety guard on machines</p>			<p>Explain types safety guards like finger guards and eye guards to avoid from injuries.</p> <p>Describe the importance of safety guards to implement them.</p> <p>Demonstrate where the eye guards required and where finger guards required.</p>	<ul style="list-style-type: none"> • Practical/ Demonstration • MCQs Written test 	
---	--	--	--	---	--

Module 13 Title: Develop Professionalism

Objective of the Module: Get understanding to develop competency of developing professionalism.

Duration: 25 hours

Theory: 20 hours

Practice: 5 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
<p>M13-LU-1 Participate in Training</p>	<p>9</p>		<p>Trainee will:</p> <ul style="list-style-type: none"> • Explain importance and advantages of getting technical and professional trainings 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	<p>At the end of the module</p>
<p>M13-LU-2 Interact with colleagues</p>	<p>6</p>		<p>Trainee will:</p> <ul style="list-style-type: none"> • Explain and demonstrate effective communication skills and interaction with colleagues 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
<p>M13-LU-3 Consult with experts</p>	<p>5</p>		<p>Trainee will:</p> <ul style="list-style-type: none"> • Explain how to take guidance from experts/seniors 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

M13-LU-4 Participate in skill test/ competition	5		Trainee will: <ul style="list-style-type: none"> • Explain the importance of evaluation by skill test/competition for further training and development 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
--	---	--	---	--	--

Module 14 Title: Observe Occupational health and safety practices

Objective of the Module: Get understanding to develop competency how to observe occupational health and safety practices.

Duration: 25 hours

Theory: 20 hours

Practice: 5 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M14-LU-1 Observe health, safety and security Related procedures.	5		Trainee will: <ul style="list-style-type: none"> • Explain and demonstrate occupation, health and safety practices working at a station 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M14-LU-2 Follow workplace health safety and security requirements	7		Trainee will: <ul style="list-style-type: none"> • Explain and demonstrate workplace health, safety and security requirement 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M14-LU-3 Follow of planning , organizing and safe work techniques	8		Trainee will: <ul style="list-style-type: none"> • Explain about safe work techniques • Explain types of hazards on workstation and with in factory i.e fire, back joint and neck damage, cutting hazards etc 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M14-LU-4 Deal with hazardous or emergency Situations	5		Trainee will:	<ul style="list-style-type: none"> • Oral 	

			<ul style="list-style-type: none">• Demonstrate to deal with the hazardous or emergency situations	<ul style="list-style-type: none">• Practical/ Demonstration• MCQs• Written test	
--	--	--	--	--	--

Module 15 Title: Communicate with co-workers effectively

Objective of the Module: Get understanding to develop competency to Communicate with co-workers effectively.

Duration: 20 hours

Theory: 15 hours

Practice: 5 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M15-LU-1 Adopt effective Communication and behaviour with co-workers.	8		Trainee will: <ul style="list-style-type: none"> • Explain about communication channels and its importance for conducive behavior with co-workers 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M15-LU-2 Interpret work related instructions correctly	5		Trainee will: <ul style="list-style-type: none"> • Explain work related instruction correctly 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M15-LU-3 Produce reports and prepare work related documents in a proper form.	7		Trainee will: <ul style="list-style-type: none"> • Explain report writing skills as per requirements 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

Module 16 Title: Work in a team

Objective of the Module: Get understanding to develop competency of team work.

Duration: 15 hours

Theory: 10 hours

Practice: 5 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M16-LU-1 Perform duties and responsibilities in a positive manner	3		Trainee will: <ul style="list-style-type: none"> • Explain about communication channels and its importance for conducive behavior with co-workers 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M16-LU-2 Seek assistance from co-workers when difficulties arise	3		Trainee will: <ul style="list-style-type: none"> • Explain work related instruction correctly 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M16-LU-3 Respect difference in personal beliefs and values	2		Trainee will: <ul style="list-style-type: none"> • Explain report writing skills as per requirements 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

M16-LU-4 Contribute to group work activities	3		Trainee will: <ul style="list-style-type: none"> • Explain about communication channels and its importance for conducive behavior with co-workers 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M16-LU-5 Share information related to group members	2		Trainee will: <ul style="list-style-type: none"> • Explain work related instruction correctly 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M16-LU-6 Provide support to achieve organizational goals	2		Trainee will: <ul style="list-style-type: none"> • Explain report writing skills as per requirements 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

Module 17 Title: Manage Time

Objective of the Module: Get understanding to develop competency how to manage the time effectively.

Duration: 20 hours

Theory: 15 hours

Practice: 5 hours

Learning Unit	Theory Days/hours	Workplace Days/hours	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
M17-LU-1 Manage time to complete the assigned work	4		Trainee will: <ul style="list-style-type: none"> • Explain time management and self management skills 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	At the end of the module
M17-LU-2 Interpret work related instructions correctly	4		Trainee will: <ul style="list-style-type: none"> • Explain work load management techniques 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M17-LU-3 Prioritize tasks	4		Trainee will: <ul style="list-style-type: none"> • Explain importance and methods of task prioritization at work place 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	
M17-LU-4 Meet the specified deadlines	4		Trainee will:	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration 	

			<ul style="list-style-type: none"> • Explain how to meet the required and specified deadline of a task 	<ul style="list-style-type: none"> • MCQs • Written test 	
M17-LU-5 Handle the co-workers	4		<p>Trainee will:</p> <ul style="list-style-type: none"> • Explain how to handle co-workers with effective time management for better coordination and productivity 	<ul style="list-style-type: none"> • Oral • Practical/ Demonstration • MCQs • Written test 	

List of Machinery/Equipment/Tools

(For a Class of 20 Students)

NAME OF TRADE	Industrial Engineering
Duration of Course	6 Months

Sr.No	Nomenclature of Equipment/Tools	Quantity
1	Stop Watch	20
2	Measurement Tape	20
3	Calculator	20
4	Feed Of Arm Machine	4
5	Single Needle Lock Stitch Machine	5
6	Single Needle Chain Stitch Machine	0
7	Double Needle Lock Stitch Machine	2
8	Double Needle Chain Stitch Machine	0

9	Bartack	2
10	Waist band Machine	2
11	5Thread Safety Over lock Machine	3
12	Button holes machine	1
13	Button stitch machine	1
14	Screw driver	10
15	Tweezer	5
16	L-key	2
17	Needles of all mentioned machines	15 pkt
18	Scissor	5
19	Bobbin& bobbin case	10

List of Consumable Materials

(For a Class of 25 Students)

Sr.No	Name of Material/Items	Quantity/Student	For 20 students
1	Fabric for fabric shapes	200 Mtr	
2	Stop watches	20 Pcs	
3	Calculators	20pcs	
4	Paper Exercises	100 pads	
5	Peg board	2 pcs & 240 pegs	
6	Pin Board	2Pcs	
7	Needle Board	2 Pcs	
8	Ball & Tube	2Pcs & 25 Balls	
9	Cutting of Garments	60/ 3 Garment per students	
10	Thread	100 Cone	
11	Bobbin& bobbin case	10	
12	Machine Oil	30 Ltr	

Contributions for Development of This Curriculum

DACUM Working Group

Mr. Zohaib Raza Inayat Assistant Manager Delta Garments Ltd.	Mr.Habib Ullah Training Instructor Azgard-9 Ltd.
Mr.Atif Iqbal Khan Assistant Manager Delta Garments Ltd	Syed Zahid Assistant Manager Azgard-9 Ltd.
Saba Abdul Sattar Training Instructor Delta Garments Ltd.	Mr.Akmal Mehdi Training Instructor Azgard-9 Ltd.
Mr.Hafiz Hamza Assistant Manager Delta Garments Ltd	Mr. Adnan Sarfraz PRGMEA
Mr.Tahir Mahmood Khan Training Instructor Azgard-9 Ltd.	Mr. Mohammad Moosa PRGMEA
Mr. Mohammad Naeem Training Instructor Azgard-9 Ltd.	Mr. Abdul Karim Ambition Apparel
Mr. Mohammad Mudassar Stitch in Style	

Curriculum Developer

Mr. Moazzam IE Manager, AZGUARD.	Mr. Kamran Sandhu Principal/Project Director Pakistan Readymade Garments Training Institute (PRGTI), Lahore
-------------------------------------	--

National Curriculum Review Committee (NCRC) Members

Mr. MoazzumAli Industrial Engineer, Azgard 9	Mr. Amir Nadeem Cutting Master, Forest Sweater
Mr. Muhammad Javaid Baig Quality Manager, Forest Sweater	Mr. Yousaf Mukhtar Production Manager, Forest Sweater
Mr. Umer Manzoor Commercial Manager, Forest Sweater	

DACUM Facilitator

Mr. Ali Khan, GIZ, Islamabad	DACUM Coordinator Mr. Muhammad Nasir Khan Deputy Director, NAVTTC, Islamabad
------------------------------	---