Garment Production

Level-I

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Module Title:- Understanding Garment Manufacturing Process

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ACRONYM

OHS: - Occupational Health and Safety

SWMS:-.safe work method statements

CB:-centre back

CF:-canter front

QMS:-quality management system

CAD:-computerize aided designee

SS:-side seam

TMS:-total management system

Acknowledgment

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INTRODUCTION OF THE MODULE

Garment manufacturing is a huge process. All operations are done in different departments in garment industry. It is not possible to describe briefly about apparel production. Garment manufacturing is a sequential processes such as designing, sampling, laying, marking, cutting, stitching, checking, finishing, pressing and packaging. Garments manufacturing process consists of multiple steps. All operations are usually done in different departments because it's a sequential process from choosing the fabric, designing, sampling, making, finishing, checking, packaging, and so on. For a bigger brand with many resources, it can take only a few weeks of production, while for a smaller brand, it may take a bit longer because of the limited resources.

This module is designed to meet the industry requirement under the irrigation and drainage occupational standard, particularly for the unit of competency: **Understand Garment-Manufacturing Process.**

This module covers the units:

- Garment Manufacturing
- Supply Chains
- Relevant Legislation And Guidelines
- Interpret Garment Manufacturing Information
- Store Information

Learning Objective of the Module

- Identify and understanding of garment manufacturing
- Identify relevant legislation and guidelines
- Identify production processes and supply chains
- knowing basic garment manufacturing process
- Access and interpret garment manufacturing information
- Use and store Information

Module Instruction

For effective use this modules trainees are expected to follow the following module instruction:

1. Read the information written in each unit
2. Accomplish the Self-checks at the end of each unit
3. Perform Operation Sheets which were provided at the end of units

4. Do the “LAP test” giver at the end of each unit and
5. Read the identified reference book for Examples and exercise.

UNIT ONE: GARMENT MANUFACTURING PRODUCTION PROCESS

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Overview of garment manufacturing process
- Information needs and confirm with appropriate personnel
- Garment manufacturing operations
- Authenticity of information resources
- Work place procedures in garment manufacturing process

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Overview of garment manufacturing process
- Identifying information needs and confirm with appropriate personnel
- Identifying workplace information in garment manufacturing operations
- Check currency and authenticity of information resources
- Identifying Work place procedures to assist in garment manufacturing process

1.1 Overview of garment manufacturing process

Garment manufacturing is a huge process. All operations are done in different departments in garment industry. It is not possible to describe briefly about apparel production. Garment manufacturing is a sequential processes such as designing, sampling, laying, marking, cutting, stitching, checking, finishing, pressing and packaging etc. In this process, raw materials convert into finished products. I will describe all operations of garment manufacturing step by step in section wise.

1.2 Garment manufacturing operations /Flow Chart

Design

↓

Sample

↓

Pattern

↓

Pattern Grading

↓

Marker Making

↓

Spreading Fabric

↓

Cutting Fabric

↓

Sorting out & bundling cut fabric

↓

Print/ Embroidery

↓

Assembling the part by sewing

↓

Sewing quality inspection

↓

Ironing/ Pressing

↓

Hand Tag/**Label**

↓

Final Inspection

↓

Packing

↓

Size wise cartooning

↓

Cartoon Inspection

↓

Warehouse

↓

Shipment

There are many types sample are needed when garments are going to make a product.

Types of sample:

1. First pattern sample
2. Development sample
3. Second pattern sample
4. Counter sample
5. Salesman sample
6. Photo sample
7. Approval sample
8. Pre-production sample
9. Production sample
10. Shipment sample

1. First pattern sample: - A design given by buyer and make it physical version of the garment. Here are some criteria to develop a first sample. They maintain sequence to develop it.

Thinking of a design

↓

Draw in CAD

↓

Pattern

↓

Sample

Development Sample: -Which sample are developed by sample section from primary pattern sample.

Second Pattern Sample: - Usually designer/ developer always ask for some changes to the first pattern. Second pattern is made as per comments.

Counter Sample:-Where first pattern is made on designers artwork, Counter sample is to make not on designer's artwork, has to follow another sample given by the merchandiser.

Salesman Sample: - Salesman Sample is made when price is confirmed and order are on speculation. Buyer held a meeting with its customer and record their response on order quantity per color, size etc. and finally place order to their vendor.

Photo Sample: - Photo samples are made with actual color and material to be worn by models on the event of shooting for catalog.

Approval Sample: - It is sent to buyer for his approval of the conformity that the revision is done correctly. If any fault found then the sample go back to garments.

Pre-Production Sample: - When the production accessories come to the garments for the production then garments makes a sample for a buyer. Which is called pre-production sample.

Production Sample: Assurance to the buyer that the bulk is being produced as per specifications.

Shipping Sample: - This sample send to shipping inspector. Who give the product to the buyer it is important sample because of shipping inspector give a note to buyer as sample base.

Sample making procedure

There are many types of procedure to make sample. But in my garments, they follow this type procedure. I am giving a flow chart to making sample in my garment manufacturing industry.

Thinking and Sketch

↓

Material and 1st Pattern

↓

Photo type sample and
give the sample to buyer

↓

Take the buyer comments

↓

Dummy

↓

Approval for Production

↓

Take the buyer comments

↓

Bulk production

↓

Send Photo, Sales man,
shipping sample

↓

Production Sample

↓

Send to the Garments

Cutting Section: - Fabric is a single piece of sheet. When we need garments then we need to cut. Cutting is final step of sample, marker and fabric spreading. Because next process is sewing. When sewing starts then other process also starts. There are many types of cutting process but in Bangladesh almost everyone uses a same process. And this is manually process. Cutting master cut the fabric by hand cutting machine. There is a big long table where cut the fabric. Garment cutting section Maker paper kept up on the fabric surface, and cutting muster follow the line and cut the fabric.

Pattern Making Section: - Pattern making process is drawing or art in a flat paper of flat fabric. Basically, garment manufacturing industries make their pattern by using flat paper. Because pattern can easily removable from pattern paper. So, garments industries follow the pattern making process by using paper. In Divine Textile Ltd, they also make their pattern by using paper. And the paper name is pattern paper. Pattern is important because, it is primary stage of a garments making. If pattern is accurate then the garments should be accurate. Buyers give the size list to the garments, then the garments follow the size and make the pattern with allowance. Pattern is the big issue for every garment.

Marker Making Section: - Marker is a process where every pattern is kept in a long fabric. And this process factory minimized the wastage of the fabric before cutting. Marker increase the efficiency of the fabric**.**

Types of marker making

1. Manually marker making process
2. Computerized marker making process

1. Manually marker making process: - This is a process where a man done the maker by manually. No computer software is used them. Basically, who do this process he will be very experienced person, and he know how to do this. In my garments the maker making process is manually.

2. Computerized marker making process: - This is hundred percent done by computer, by using CAD (Computer aided design) or many others software.

Effect of Marker Making:

1. Increase efficiency
2. Minimize fabric wastage
3. Maximized using of fabric

Fabric Spreading Section: - In this process fabric laid on a big table which is used for cutting. Fabric spreading is important because of if fabric do not lay properly then outcome product (after cutting) was not correct. So, when the fabric go for production then it's make difficulties in making garments. So proper fabric spreading is important for garment manufacturing industry. When fabric lay properly, they used one kind of clip (Fabric attaching clip) for fixed the fabric. Marker paper also keep up on the fabric surface.

Types of fabric spreading system:

1. Automatic
2. Manual

Automatic: -When fabric spread by machine on the cutting table then it's called automatic fabric spreading.

Manual: - When fabric spread by man on the cutting table then it's called manual fabric spreading. In my factory they work in manually.

Cutting Process:

1. Marker Making
2. Fabric Spreading
3. Marker placement
4. Attaching with clip
5. Cut the fabric
6. Numbering
7. Bundling

Heat Cutting system: - When we need to cut non-woven fabric then normal cutting machine is not suitable for cutting, because non-woven fabric is basically slippery then other fabric. So we need to heat cutting machine.

Types of cutting process

1. Manual Cutting
2. Heat Cutting
3. Lesser Cutting

Manual Cutting: - It is a process which done by man is called manual cutting process. In my garments they cut the fabric in manual process. Cutting master give the instruction to worker and worker follow the instruction.

Heat cutting: - Basically, a heat machine is used for this process and the machine has copper coil. And electricity passing the coil and it became hot. Then it cut the fabric. This machine is not suitable for cloth type fabric, it is used for non-woven fabric.

Lesser Cutting: - A lesser light is used for cutting. It is very expensive cutting method but cutting is very effective.

Sewing Section: - Sewing is big important part of a garment's product. Without good sewing we cannot introduce our products in worldwide. Sewing is a process where two pieces of fabric are join. Many factors are related with sewing. (i.e.: Needle size, Machine type, Thread count, Worker capacity, Production line etc.) So sewing section is not only fabric join, it is core part of a garment manufacturing industry.

Elements of sewing:

1. Sewing Machine
2. Needle
3. Thread/Yarn

Sewing Machine: - There are many types of machines are used in Divine Textile Ltd. Every types of sewing machines are available here. They (my garments) produce jackets, trousers etc. so they need heavy machines for sewing.

List of sewing machine:

1. Plain Machine
2. Overclock machine
3. Bar tack machine
4. Button hole machine
5. Button attaching machine
6. Feed of the arm
7. Kansai

Sewing Machine Types, Features and Functions

Example: if any needle breakdown then machine automatically gives sound. There are many types of facility in this machine.

Overclock machine: - An overclock is a kind of stitch that sews over the edge of one or two pieces of cloth for edging, hemming, or seaming. It is very effective machine for garments good, because without over locking edge finishing is not to be good. There are many brands available in market but Divine Textile Ltd. use only one brand for overclock.

Barrack machine: - Barrack machine specially use for lock stitch. It contains a needle and a bobbin. It produce high density lock stitch in short place. In my garments they use barrack machine to stitch the side of pocket in jacket and pants. Stitch density depends on the GSM of fabric. If the GSM is high then the stitch density is high, If GSM is low then stitch density is also low.

Overclock machine: - This machine basically used for protect the edge of fabric and trim the extra part of fabric. This machine used when product is done by plain stitch. Five thread are used in overclock stitch machine. A sharp blade also attaches with the machine. This sharp blade cut the extra part of the fabric and gives a plain finishing in the garment's products. This machine is very fast machine so need good experienced worker to run this machine, otherwise any types of accident can be happened.

Button attaching machine: - This machine basically used for attach button on the jackets or garments goods. It is very high speed machine and this machine can attach up to 60+ button in a minute. In my garments there are two types machine. One is plastic or normal button attaching machine another is steel or clip or tip button attaching machine.

Feed of the arm: - Feed of the arm machine is actually a chain stitch machine for chain stitch designs working with sew and stitch. It contains loopier instead of bobbin. By this machine, multi thread chain stitch can be produced on garments. By this machine, stitch can be produced on heavy fabrics, like denim or jeans.

Study on Quality Control in Sewing Section

Needle is an essential product for sewing. Only machine cannot sew without needle. Needle made by stainless steel with sharp head. In sewing machine, there are different types of needle is used. In my garments industry I was found three types of needle. Which is used on plain, overclock and barrack machine. Some needles are quite bigger usually it depends on fabric. If fabric is courser then need courser needle.

Needle varies machine to machine:

- In JUKI sewing machine the needle name is BP. And needle size is 9,11,14,16,18,20
- In Sun star sewing machine they used, DP, and needle size is 9,11,14,16,18,20
- In Overclock machine, the needle size is small then stitch machine.
- Needle size of overclock machine is DC, 9,11,14,16,18,20

Sewing Process

In my industry they follow a process to maintain

Sewing.

↓

Collect fabric from cutting section

↓

Input the fabric into the line

↓

Set the machine settings

↓

Post production meeting

↓

Production line up set

↓

Production Starts

↓

Check goods quality by Sewing Quality Inspector

↓

Fault return to the worker ↓ Output

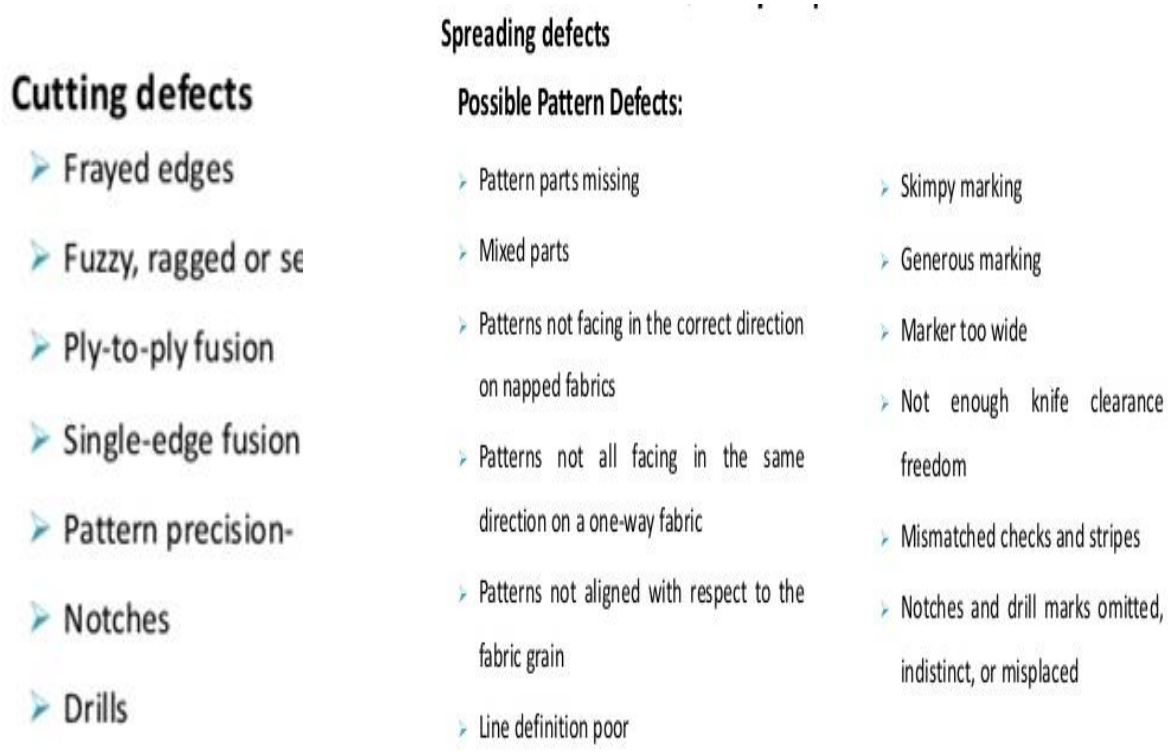
1.3 information needs and confirm with appropriate personnel

1.3.1 Quality system documentation

When designing QMS documentation, you should focus on efficiency and create processes and documents that are applicable in your organization. The QMS documentation can consist of different types of documents. Usually, it includes documents such as the Quality Policy, Quality Manual, procedures, work instructions, quality plans, and records.

The QMS documentation can consist of different types of documents. Usually, it includes documents such as the Quality Policy, Quality Manual, procedures, work instructions, quality plans, and records**.** The QMS documentation can be represented as a hierarchy, as shown in the diagram below

Quality Standards in Garment Construction This section recognizes and identifies the standards for quality clothing construction that give a garment a professional, finished look. Specific standards in construction can be expected even though there are many techniques that can produce the same finished results.



1.3.2 Customer requirements

The first step of customer research is identifying your customers.

- gender
- age
- occupation
- disposable income
- residential location
- Recreational activities.

SELFE CHECK ONE

PART ONE:-TRUE /FALSE

1) 1 Pattern is a particular style with net dimension and allowance.
2) 2, Production pattern is working pattern + allowance
3) Marker is a thin paper that contains all the components of all sizes of a particular style of garments
4) Grading is generic term for fabrics that are used to cover the inner surfaces of products, especially the inner face employs different materials from the outer surface.
5) Button is one kind of accessories that is used between two layers of fabric in garments to support, reinforce, and control areas of garments and to retain actual shape. It may be applied to base fabric by sewing and bonding.

PART TWO SHORT ANSWER

a. What is Garment?
b. What is a sample in garments?.
c. What is the counter sample in garments?
d. What is the approved sample?
e. What is the pattern?
f. What is a production pattern?

UNIT TWO: - RELEVANT LEGISLATION AND GUIDELINES

This unit to provide you the necessary information regarding the following content coverage and topics:

- Legislation and guidelines employment within garment industry sector.
- Concepts of product quality
- Employability skills for workplace production.

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- ✓ Identifying relevant legislation and guidelines common to employment within garment industry sector.
- ✓ Identifying Concepts of product quality
- ✓ Identifying Employability skills for workplace production.

2.1 legislation and guidelines employment within garment industry sector

The current legislation and guidelines are policies and procedures for safeguarding who is promoting children's welfare and putting measures in place to improve children's safety and preserve abuse. Child protection who are action taken to protect child when there is a reasonable belief that they are at risk of significant harm.

What are Policies and Procedures?

Policies and procedures go hand-in-hand but are not interchangeable. A policy is a set of general guidelines that outline the organization's plan for tackling an issue. Policies communicate the connection between the organization's vision and values and its day-to-day operations

A procedure explains a specific action plan for carrying out a policy. Procedures tells employees how to deal with a situation and when. Using policies and procedures together gives employees a well-rounded view of their workplace. They know the type of culture that the organization is striving for, what behavior is expected of them and how to achieve both of these.

The Importance of Policies and Procedures

Regardless of your organization's size, developing formal policies and procedures can make it run much more smoothly and efficiently. They communicate the values and vision of the organization, ensuring employees understand exactly what is expected of them in certain situations. Because both individual and team responsibilities are clearly documented, there is no need for trial-and-error or micromanaging. Upon reading the workplace policies and procedures, employees should clearly understand how to approach their jobs.

Formal policies and procedures save time and stress when handling HR issues. The absence of written policies results in unnecessary time and effort spent trying to agree on a course of action. With strict guidelines already in place, employees simply have to follow the procedures and managers just have to enforce the policies.

Implementing these documents also improves the way an organization looks from the outside. Formal policies and procedures help to ensure your company complies with relevant regulations.

They also demonstrate that organizations are efficient, professional and stable. This can lead to stronger business relationships and a better public reputation.

Develop Policies and Procedures in the Workplace

When creating a policy or procedure for your workplace, start by reviewing the mission statement, vision and values. According to the New South Wales Government Industrial Relations, "a workplace policy should:

- ✓ set out the aim of the policy
- ✓ explain why the policy was developed
- ✓ list who the policy applies to
- ✓ set out what is acceptable or unacceptable behavior
- ✓ set out the consequences of not complying with the policy
- ✓ provide a date when the policy was developed or updated"

2.2 Concepts of product quality

Definition of Quality-: Generally, it can be said that product is of satisfactory quality, if it satisfiers the consumers/user. The consumer will buy a product or service only if it suits his requirements. Therefore, consumers' requirements are first assessed by marketing department and then the quality decision is taken on the basis of the information collected. Although we have described the virtues of quality one basic question needs be answered.

What is quality and who decided what quality Product Quality is the collection of all the features and characteristics of a product that contribute to its ability to meet the customer needs and requirements. It's the ability of the product to fulfil what the end user wants and perceives as value. For a product to be of good quality.

In simple terms, you can understand product quality as a characteristic that is a further conglomeration of different features for fulfilling the customer needs and maintaining the industry standards, so the product does not include any deficiency. There are different factors such as raw materials, implementations of product technologies, workforce expertise, and

production-related overheads, etc. to decide the quality of a product. In this article, we will be diving deep into the world of Product Quality and try to understand its classifications and how you can maintain good quality for your products. So, let us get started right away.

2.3 Employability skills for workplace production.

Employability skills are the soft skills that help to make you stand out from other candidates aiming for the same job with similar academic qualifications. These skills are not clearly illustrated in job descriptions but they are vital to possess in order to secure a role where the employability skills match the job profile.

Employability skills are the non-technical skills that support career success such as intrapersonal skills that support goal-setting, continual learning, and sustained engagement on tasks; interpersonal/teamwork skills that support productive interactions with others and flexible adaptation to workplace organizational roles and structures; and applied competence to solve problems and think critically.

Key Employability Skills to be Successful in the Workplace

Employability skills refer to the transferable skills that individuals utilize in their workplace. Employers often seek these diverse set of skills in candidates in addition to their academic qualifications. In order to stay relevant and improve their efficiency, employees should focus on building up their employability skills. In this article, we analyses the various employability skills that are much in demand in the workplace.

Some common employability skills

While on-job training or technical skills can be acquired, employability skills come naturally or acquired through work experience, practices or education. Some basic employability skills that are desired in employees are:

- Communication skills
- Leadership
- Problem solving

- Teamwork
- Reliability
- Self-management
- Planning and organization
- Technology
- Initiative
- Learning

1. Communication: - It is one of the most important personality trait and a soft skill which is much sought after for any employment. Effective use of the five elements of communication, which include the sender, receiver, message, medium and feedback helps to deliver a message with clarity. An employee with a good communication skill helps the company to avoid any unnecessary misunderstandings and waste of time and in turn helps to increase productivity.

Communication skills can be verbal, non-verbal, visual and written. To be effective in your communication in the workplace you have to be able to understand your colleagues, their ideas and instructions. You also need to attain your objectives by convincing your co-workers with your thoughts and ideas.

Communication improves with practice. Maintain a positive expression and body language, listen carefully to others and think before you speak. Joining a club or being active on social media also helps to develop your communication skills.

2. Leadership: - Leadership skills are important at every stage in an organization. Employers look out for candidates who possess this skill set. You can demonstrate your leadership skills if you can manage your team members well, motivate and train the staff to improve their work practices and set objectives or goals for the colleagues to share in the interest of the company.

3. Problem solving: - Problem solving is the act of determining the issue, identifying the cause of the problem, selecting the best possible outcomes and implementing it. A good problem solver

helps to overcome obstacles by resolving complex issues. They are an asset to any organization as they help the team to optimize their efficiency.

More complex problems will require you to research, analyses and then make a decision. You can break up a problem into smaller parts and then address the issue. Problem solving skills can be further developed by participating in brainstorming sessions, undertaking projects and research assignments and even solving puzzles.

Some of the steps of problem solving are:

- Identify or define the issue
- Gather information
- Understand everyone's point of views or interests
- List possible options and evaluate them
- Choose an option
- Implement a solution

4. Teamwork: - Teamwork as a skill refers to the ability to know your role in the team and work amicably with your teammates. Intense global competition makes teamwork especially important to achieve better productivity. Healthy relationships between colleagues, increased job satisfaction and workflow contributes to improved team performance.

All jobs require collaboration at some point in time. Collaboration as a teamwork skill contributes to a better work environment. It also increases your chances of being hired by an organization to help reach the company goals more effectively. How employees work as a team has a direct effect on the organization's stability, innovation and productivity.

Teamwork skills can be boosted by using the following:

- Know your individual goal within a team and understand responsibilities of your role.
- Manage your time efficiently and communicate any deadlines, rules or purpose of a task clearly.

- Share your enthusiasm for a project with your colleagues.
- Appreciate and give due credit to your team members.
- Work productively together as a team to resolve any disputes.
- Join a sports team or engage in physical activities for greater motivation and a positive mindset.
- Volunteer in organizations and help co-workers in the office to build up your teamwork skills.

5. Reliability: - Being dependable and reliable is an important employability skill as it helps to build up trust with the employer. Consistency is key to reliability. Regularly meet your deadlines and produce quality work. Reliability can be boosted when you meet or exceed expectations with your work performance.

Create a daily schedule for tasks and respond promptly to queries. Quality work implies minimal errors but if there are mistakes, acknowledge and learn from it, so you can make a conscious effort not to repeat the same.

6. Self-management:- Self-management is the ability to organize and manage your work commitments consistently with minimal or no supervision and guidance. This skill also helps to save time, which curates efficiency.

Self-management skills can be developed by:

- Taking initiative and asking for greater responsibilities at work.
- Being accountable for your work and actions.
- Participation in volunteer work and managing your commitments.

7. Planning and Organization: - If you can plan and organize efficiently, it helps your employer to achieve their goals by managing time, money and effort. Organization means being able to plan your schedule and do your work accordingly. You know the priority of the task, how

long it would take and the tools needed to complete it. Organization is about being resourceful, taking initiative to manage priorities in a timely manner and to take decisions.

Tips to develop your organization skills:

- Create a timetable
- Identify the goals and things to do
- Organize your work
- Priorities your tasks and plan a schedule
- Arrange or organize events which help to build up this skill set

8. Technology: - Technology is crucial for employees in order to use the latest technical know-how. Knowledge of technology is one of the leading skill set that organizations look for when hiring staff. It helps employees to stay relevant and ahead of the competition. While the technical skills required for different jobs vary significantly across roles, some basic knowledge of technology is crucial in today's work place. Organizations value employees who can grasp the technology based concepts and learn how to use them effectively.

Steps to further develop technology skills

- Enroll in a course or online training
- Ask for extra on-job training
- Stay updated with the latest technology being used in the industry
- Try new apps and technology while listing the ones you already know and use in your daily life

9. Initiative: - Employers value initiative as a key employability skill to possess. Initiative means the motivation to take pre-emptive action and adapt to new situations accordingly. To demonstrate initiative you have to first identify the opportunities and the client requirements without being asked to do so. Understand the goals of the task or the organization and create strategic plans accordingly to translate the ideas into action.

People with initiative have a strong desire to succeed. They would strive to improve themselves by regularly upgrading their skills and knowledge. Employers and organizations value such employees.

Initiative can be improved by

- Approaching employers and organizations for new opportunities
- Understanding the viability of a plan and then initiating ideas and solutions
- Proposing changes to policies while adhering to cultural and political sensitivities
- Setting up local charities or organizations

10. Learning: - Learning skills enable the employee to improve their knowledge about the organization. Employees with good learning skills tend to adapt to change easily by learning new concepts and methods. They are valuable to the firm as they can quickly fill up challenging positions and save time. Learning skills can be developed further by taking a skills based course, researching or acquiring a new hobby. Learning skills ensure a smooth transition to the implementation of new systems, processes and technology.

SELFE CHECK TWO

PART ONE:-TRUE /FALSE

1) Product Quality is the collection of all the features and characteristics of a product that contribute to its ability to meet the customer needs and requirements.

2) Employability skills are the soft skills that help to make you stand out from other candidates aiming for the same job with similar academic qualifications

3) Teamwork as a skill refers to the ability to know your role in the team and work amicably with your teammates

4) Leadership skills are important at every stage in an organization. Employers look out for candidates who possess this skill set.

PART TWO:-LONG ANSWER

a) List out Some basic employability skills that are desired in employees

b) List out Some of the steps of problem solving

.

UNIT THRE: - PRODUCTION PROCESSES AND SUPPLY CHAINS

This unit to provide you the necessary information regarding the following content coverage and topics:

- Workplace materials
- supply chains processes for converting materials into products

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- ✓ Identifying Workplace materials
- ✓ Identifying workplace supply chains processes for converting materials into products

3.1 Workplace materials

Workplace materials means materials or substances used, or encountered, in the course of work. Related to workplace materials when designing workplace in garment industry it is necessary to apply principles of ergonomics.

(1) Designing workplace

(2) Designing working processes.

(3) Determining working time.

(4) Handling material and tools.

3.2 supply chains processes for converting materials into products

The supply chain management process is composed of four main parts: demand management, supply management, S&OP, and product a supply chain is an entire system of producing and delivering a product or service, from the very beginning stage of sourcing the raw materials to the final delivery of the product or service to end-users. The supply chain lays out all aspects of the production process, including the activities involved at each stage, information that

is being communicated, natural resources that are transformed into useful materials, human resources, and other components that go into the finished product or service.

Why supply chain management is important

A positive or negative impact on the supply chain resounds throughout the business. There are two core areas to the impact: customer happiness and ROI.

Happy customer = happy business = higher performance

A smooth return process means an effective supply chain, one that's well connected and involves communication along the chain. When the supply chain meets or exceeds the expectations of the customer, it's because of efficiencies. The entire business benefits through higher-order rates, positive sentiment in the customer's mind, and lower cost-to-serve for the business.

Higher performance = more cost efficiency = higher pressure

Higher performance is measured in terms of the efficiency of all processes and people to move goods and services to market along the supply chain. Increased supply chain efficiency can translate to pressure on the team and their capabilities, as costs and budgets are held flat or reduced when they're expected to move the same or a greater volume of product at the same or a higher quality level.

Improvements to profits for the business are measured via metrics like working capital turnover or cash conversion performance; as business health improves, profitable cash management and revenue conversion are the result. Flattening the cost curve often becomes a challenge unless two factors are considered: new capabilities (process and data) that drive faster, higher-quality decisions; and using a tool that scales favorably for the value it delivers for the business.

Demand planning is the process of forecasting demand to make sure products can be reliably delivered. Effective demand planning can improve the accuracy of revenue forecasts, align inventory levels with peaks and troughs in demand, and enhance profitability for a particular channel or product.

Merchandise planning is a systematic approach to planning, buying, and selling merchandise to maximize the return on investment (ROI) while simultaneously making merchandise available at the places, times, prices, and quantities that the market demands.

Trade promotion planning is a marketing technique to increase demand for products in retail stores based on special pricing, display fixtures, demonstrations, value-added bonuses, no-obligation gifts, and other promotions. Trade promotions help drive short-term consumer demand for products normally sold in retail environments.

2. Supply management

Supply management is made up of five areas: supply planning, production planning, inventory planning, capacity planning, and distribution planning.

- Supply planning determines how best to fulfill the requirements created from the demand plan. The objective is to balance supply and demand in a manner that achieves the financial and service objectives of the enterprise.
- Production planning addresses the production and manufacturing modules within a company. It considers the resource allocation of employees, materials, and of production capacity.
- Production/supply planning consists of:
- Supplier management and collaboration
- Production scheduling
- Inventory planning determines the optimal quantity and timing of inventory to align it with sales and production needs.
- Capacity planning determines the production staff and equipment needed to meet the demand for products.
- Distribution planning and network planning oversees the movement of goods from a supplier or manufacturer to the point of sale. Distribution management is an overarching

term that refers to processes such as packaging, inventory, warehousing, supply chain, and logistics.

3. Sales and operations planning (S&OP)

Sales and operations planning (S&OP) is a monthly integrated business management process that empowers leadership to focus on key supply chain drivers, including sales, marketing, demand management, production, inventory management, and new product introduction.

With an eye on financial and business impact, the goal of S&OP is to enable executives to make better-informed decisions through a dynamic connection of plans and strategies across the business. Often repeated on a monthly basis, S&OP enables effective supply chain management and focuses the resources of an organization on delivering what their customers need while staying profitable.

4. Product portfolio management

Product portfolio management is the process from creating a product idea creation to market introduction. A company must have an exit strategy for its product when it reaches the end of its profitable life or in case the product doesn't sell well. Product portfolio management includes:

- New product introduction
- End-of-life planning
- Cannibalization planning
- Commercialization and ramp planning
- Contribution margin analysis
- Portfolio management
- Brand, portfolio, and platform planning

5. Supply chain management best practices

To succeed in a growing global market, you need a supply chain that's connected from start to finish, across your enterprise and beyond.

Make the move to real-time supply chain planning: -

When using ERP systems and spreadsheets for planning, companies typically rely only on historical data, resulting in little wiggle room for changes should any disruptions occur in demand or supply For example, based on the previous year's numbers, a company can estimate the number of products it will sell in the next quarter.

But what if a massive hurricane destroys a key distribution center, leading to too little supply on the shelves? With Ana plan's real-time connected supply chain planning solution, you can create "what-if" scenarios and plan more effectively so you're ready when disruptions occur. **Unify supply chain planning with enterprise planning**:-Vital second step is connecting traditionally soloed supply chain planning to sales and operations planning and financial planning. Companies can benefit from synchronizing their short-term operational planning with their wider business planning processes to make real-time updates to inventory forecasts.

SELFE CHECK THREE

PART ONE:-TRUE /FALSE

1) Workplace materials means materials or substances used, or encountered, in the course of work.
2) The supply chain management process is composed of four main parts: demand management, supply management, S&OP, and product
3) Product portfolio management is the process from creating a product idea creation to market introduction.

PART TWO LONG ANSWER

1) Why supply chain management is important
2) List out principles of ergonomics

UNIT FOUR: - INTERPRET GARMENT MANUFACTURING INFORMATION

This unit to provide you the necessary information regarding the following content coverage and topics:

- Basic concepts of work place activities according to manufacturers' specification
- Garment production system concept
- Nature of functional department within the industry.

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- ✓ Identify and Understand the basic concepts and work place area of the sector according to manufacturers' specification
- ✓ knowing the concept of the industry and work activities involved within the industry
- ✓ Understand about Garment production system concept and also garment production
- ✓ Understand about the nature of functional department within the industry.

4.1 Basic concepts of work place activities in manufacturers

Every organization whether it produces goods or provides services sees Job 1 as furnishing customers with quality products. Thus, to compete with other organizations, a company must convert resources (materials, labor, money, information) into goods or services as efficiently as possible. The upper-level manager who directs this transformation process is called an operations manager.

The job of operations management (OM), then, consists of all the activities involved in transforming a product idea into a finished product, as well as those involved in planning and controlling the systems that produce goods and services. In other words, operations managers manage the process that transforms inputs into outputs.

Person's responsibilities can be grouped as follows:

- ***Production planning***. During production planning, managers determine how goods will be produced, where production will take place, and how manufacturing facilities will be laid out.
- ***Production control*.** Once the production process is under way, managers must continually schedule and monitor the activities that make up that process. They must solicit and respond to feedback and make adjustments where needed. At this stage, they also oversee the purchasing of raw materials and the handling of inventories.
- ***Quality control***. Finally, the operations manager is directly involved in efforts to ensure that goods are produced according to specifications and that quality standards are maintained.
- **Concepts in Work**: Clearly and concisely explains the central ideas, debates and theories of work. Offers a broad overview of the social, political and economic contexts of work illustrated from diverse industrial societies. Begins each entry with a snapshot definition followed by key words and guidance for further reading.

Activities like lunch-and-learns that showcase hidden talents and hobbies are also great. They help team members bond over shared or new interests. Teams that engage in fun activities have a stronger sense of trust and transparency. As a result, the entire company will be able to work together more efficiently.

4.2 Garment production system concept / Apparel Production System

Garments production system is an integration of materials handling, production processes**,** personnel, and equipment's that direct workflow and generate finished products. Simply, it is a way how the two-dimensional fabric is being converted into a three-dimensional garment in a manufacturing system.

Garments assembly is a basic requirement of clothing and fashion design which involves a conversion of raw materials into a stitched and wearable piece of clothing. To make a complete garment assembling is required for different parts of a garment. The front and the back body, yoke, sleeve, collar, cuff, placket, and pocket need to be assembled together in order to make a basic shirt.

Production systems are needed to enable companies to produce the largest number of products effectively and efficiently for the lowest cost but at the required quality. Garments production system is an integration of materials handling, production processes, personnel, and equipment's that direct workflow and generate finished products.

Simply, it is a way how the two-dimensional fabric is being converted into a three-dimensional garment in a manufacturing system. Garments can be made by applying different types of system. The garment production system used by an individual or in small tailor shops is different from the systems used in the factories. Two systems are described bellows-

1) Individual System

It is the traditional method of production in which one operator or small team is made one complete garment at the time by carrying out all the sewing processes necessary to assemble a garment. The operator can also make a pattern and cut the fabric according to his or her own method of work. After completion of assembling one single garment, the operator will start assembling the next one and so on. This type of garment assembly system is effective when varieties of garments are required to be produced in very small quantities. The individual system

Of assembling garment is more common with homemakers, local tailors,



Fig: Individual System

Advantage

- It has a quick throughput time and easy to supervise.
- There is no WIP in make through.
- No problem of absenteeism

Disadvantages

- High labor cost
- Multi-skilled operator is required for assembling
- Low productivity
- This system is limited to couture and sample making

When products are made in a factory, there will be a system to ensure everything runs smoothly. These are generally referred to as production systems. Several different production systems are used in the apparel industry for assembling a garment. The choice of best production system depends on the type of product, number of product to be made, when the products are needed,

the size of the factory, the skills of the employees. The most commonly used types of production systems in the garment industry are:

- ✓ Progressive Bundle System (PBS)
- ✓ Unit Production System (UPS)
- ✓ Modular Production System (MPS)

Progressive Bundle System (PBS)

The progressive bundle system is a traditional production system that has been widely used in the apparel industries for many decades and still is today. In this system bundles of garments parts are moved in sequence from one sewing machine operator to the next. Each worker receives a bundle of unfinished garments and performs a single operation on each garment in the bundle. After finished of his/her work on a bundle, they are re-tied the bundle and passed on to the next operator. Each PBS task is given a target time or "SAM" (Standard Allowed Minutes). The success of PBS depends on how the production system is set up and used in a plant.



Fig: Progressive Bundle System

Unit Production System (UPS)

The unit production system (UPS) for apparel industries is a flexible material handling system that requires a computerized overhead transportation system to move the garment components automatically from one workstation to the next according to a pre-determined sequence. It replaces the traditional garment production system of handing, bundling, and tying and untying, and manually moving garment parts. It provides uninterrupted workflow to the workers and helps to improve work efficiency and product quality. In the fast-moving fashion and apparel industry this is highly essential.



Fig: Unit Production System

Modular Production System

Modular production system involves a group of 4-17 people who set their own standards and work together to produce a finished garment. They work as a team or module and each team member works on more than one operation. In this system, operators help each other to finish the garment quickly and the team is fully responsible for the production and quality. The number of teams in a plant varies with the need of the industry, size of the industry and product line in garments. This system MPS is the perfect solution for the apparel manufacturer where quick response is needed. This system is also popular as a Cellular Garment Manufacturing, flexible work groups or Toyota Sewing System (TSS).



Fig: Modular Production System

4.3 Nature of functional department within the industry

This is perhaps the most logical and simple form of depart mentation. Functional depart mentation is the process of creating organizational units on the basis of the firm's major activities. It involves grouping employees according to the broad tasks they perform. Normally separate departments are created for all the key activities of the business. For example, in a

manufacturing company, the activities essential to the existence of the company relate to production, marketing human resources and finance.

However, in non-manufacturing concerns the primary activities may differ. In a transport company, the key areas may be operations, sales and finance. Thus, public utility concerns like electricity, transport, banking, insurance and hospitals have their own distinct key functional areas. In all these cases, under functional depart mentation, major or primary departments are created along the key functional areas of the respective business.

If the organization is large, or in other words, as the organization grows, major departments can be subdivided. These sub divisions or departments are called derivative departments. The essential idea is to take advantage of specialization.

Advantage

- It is the most logical and simple form of depart mentation;
  It makes efficient use of specialized resources and skills;
- It makes supervision easier, since each manager has to be an expert in only his or her functional area of operation; and
- It fosters development of expertise in specialized areas.

Disadvantage

- Functional depart mentation is often found to be inadequate to meet the growing needs of the business, particularly as the organization expands or diversifies its activities;
- Further, decision-making becomes slow as the functional managers have to get the approval of the headquarters;
- It is also difficult to determine accountability in a functional structure. If a product fails, the question as to who is responsible cannot be easily answered; and
- Functional managers tend to develop narrow perspective and loose sight of the bigger picture. Members of each department feel isolated from those in other departments. For example, manufacturing department may be obsessed with cost reduction and meeting the

delivery dates neglecting the quality control. As a result, marketing department may be flooded with complaints.

SELFE CHECK FOUR

PART ONE:-TRUE /FALSE

1) The job of operations management (OM), then, consists of all the activities involved in transforming a product idea into a finished product, as well as those involved in planning and controlling the systems that produce goods and services.

2) Operations managers manage the process that transforms inputs into outputs.

3) The traditional method of production in which one operator or small team is made one complete garment.

PART TWO LONG ANSWER

1) List out OM Person's responsibilities and define each

2) what Garment production system and define

UNIT FIVE: - INTERPRET GARMENT MANUFACTURING INFORMATION

This unit to provide you the necessary information regarding the following content coverage and topics:

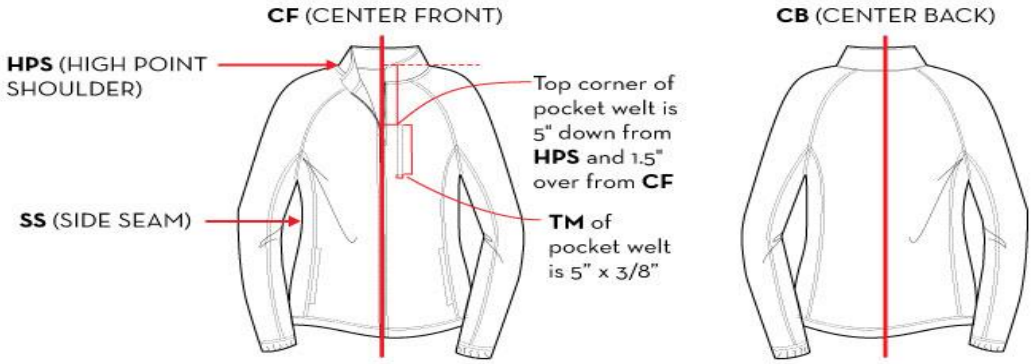
- abbreviations and clothing production terminology
- working drawings guide
- standard operating procedures (SOPs),
- Note information and summarize

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- ✓ Use a range of reading techniques and simple search techniques to locate relevant information
- ✓ Interpret symbols, codes, legends, abbreviations and clothing production terminology
- ✓ Interpret working drawings to guide work
- ✓ standard operating procedures (SOPs), work instructions and other reference material
- ✓ Note information and summarize, if necessary, for subsequent use

5.1 abbreviations and clothing production terminology

Garment terms and abbreviations and clothing production terminology in fashion industry are used to communicate with factories and vendors to ensure a designer's vision is accurately translated into a physical product. These are some of the most common garment terms, abbreviations and their definitions that designers use to spec a garment.



Common garment terms (aka Points of Measure / POMs) used to spec a garment

- HPS (High Point Shoulder): The highest point of the shoulder seam on a garment, typically where the shoulder seam meets the collar seam (unless there is a shoulder forward seam or a shoulder panel, in which case it would be the point at which the fold of the shoulder meets the collar seam).
- CF (Center Front): The center front of a garment, whether on a top, bottom or other piece of clothing.
- CB (Center Back): The center back of a garment, whether on a top, bottom or other piece of clothing.
- SS (Side Seam): The seam at the side of a garment, whether on a top, bottom or other piece of clothing.
- TM (Total Measurement): The total measurement from one point to another.

5.2 Working drawings guide

Working drawings are drawings used as a reference or guide in the manufacture of a product. This most often refers to engineering and architecture, but working drawings are used in many different modes of construction. These drawings are composed according to industry standards so that all the information is easily and clearly understood, and standard conventions and units are used there are two distinct types of working drawing:

One is *detail drawing*, which shows various views of an object and includes important information such as measurements and tolerances that the craftsperson or machine operator

might need to know when manufacturing the object, or that people using the object might need to know. The second is an *assembly drawing*, which shows how various components fit together during construction.

Working drawings and specifications are the primary working documents used by a contractor to bid and execute a project. Specifications are the written documents that go with the construction documents and describe the materials as well as the installation methods.

They consist of precisely written documentation that describes a project to be constructed, supplementing drawings and forming part of the contract and describing qualities of materials, their methods of manufacture and installation into the project, workmanship and mode of construction, in addition to providing other information not shown in the drawings including description of the final result.

Many designers have considerable difficulty preparing a competent set of standard building specifications, partly because it demands a shift of gears by having to use a different medium to Specifications should complement the drawings, not overlap or duplicate information in the drawings, and normally prescribe the quality standards of construction expected on the project. Specifications indicate the procedure by means of which it may be determined whether the requirements given are satisfied.

Because specifications are an integral part of the contract documents, they are considered to be legal documents, and should therefore be comprehensive, accurate, and clear. Specification writing has two principal objectives: express design content—using written documents instead of drawing. It also propels the designer into the technical realm of materials that are not normally dealt with on a daily basis and which the designer may not be up to speed on.

(1) Defining the scope of work

(2) Acting as a set of instructions.

Defining the scope of work is at the core of specification writing. The required level of quality of the product and services must be clearly communicated to bidders and the party executing the contract and ensuring that the completed project conforms to this specified quality. Projects now generally incorporate the specifications within a project manual that is issued as part of the

contract documents package along with the drawings, bidding requirements, and other contract conditions. The specification writer should ensure that the requirements are compatible with the methods that are to be employed and also that the methods selected in one specification are compatible with those selected in another.

A primary function of project specifications is to give detailed information regarding materials and methods of work for a particular construction project. They cover various components relating to the project, including general conditions, scope of work, quality of materials, and standards of workmanship.

The drawings, collectively with the project specifications, define the project in detail and clearly delineate exactly how it is to be constructed. The project drawings and specifications are an integral part of the contract documents and are inseparable. The drawings reflect what the project specifications are unlikely to cover; and the project specifications indicate what the drawings are unlikely to portray. Specifications are also sometimes used to further clarify details that are not adequately covered by the drawings and notes on the drawings. Project specifications will always take precedence over the drawings, should the information on the drawings conflict with that in the project specifications.

5.2.1 Product specification sheets

The sealing sample must be accompanied by clear diagrammatic working drawings of front, back and side views, with enlarged details, and must have clear references to materials and trims, measurements and the positioning of wearable technology. A sequence of make-up, with the relevant methods and finishes, must be explained in detail. Garment pattern pieces should be clearly marked with appropriate references to style name and number, name of component, size, grain lines, seam allowances, notches, and direction of predominant stretch and positioning of wearable devices.

Patterns must indicate the final textile specification in relation to garment cut and the placement or zoning of different qualities in relation to their functionality. New construction techniques, such as bonding and molding, will demand precise guidance. ‘Whatever the market sector or category of clothing, it is essential that the designer and pattern-cutter work together within the framework of the capabilities of the manufacturing available to them. They must be aware of the limitations of their technological and human resources.

5.2.2 Selecting and working

The design process consists of many phases, beginning with the initial meeting between the project owner and the architect where concepts were exchanged and continuing on to the production of what is often referred to as "working drawings." Drawings at this point represent the final stage of design and are required to obtain a building permit and thereby commence construction. The documents produced at each of these stages are referred to as "deliverables."

A project owner may not always want to proceed directly to "working drawings" for a number of reasons:

5.3 standard operating procedures (SOPs),

A standard operating procedure (SOP) is a set of step-by-step instructions compiled by an organization to help workers carry out routine operations**.** SOPs aim to achieve efficiency, quality output and uniformity of performance, while reducing miscommunication and failure to comply with industry regulations. But standard operating procedures aren't just for big Fortune 500 companies. In my freelance practice, I've developed SOPs to outsource low value tasks. That includes tasks that I'd prefer not to do, like sending my clients invoices or even editing a document for publication

When you add a new employee to your company or a new member of your team, you can't expect them to know everything from day one. And although you should certainly take the time to train them, time is always in short supply for training. That's why companies of all sizes develop standard operating procedures, or SOPs.

Standard operating procedures: create continuity in business. Employees, customers, and the workplace will change. SOPs will ensure - that a standard set of tasks can continue to be completed while those all shift

5.4 Note information and summarize

Reading is a great habit that can change human life significantly. It can entertain us; amuse us and enrich us with knowledge and experiences narrated. There exist some reading techniques, which if mastered at a growing stage can help us, be better and far more comprehensive readers. These skills might not necessarily be learned as rigid theories or rules but if understood well once they can definitely enhance the reading skills and increase the quality and quantity of output that we get from after reading

Reading Techniques or Styles are the following:

1. Scanning.
2. Skimming.
3. Active Reading.
4. Detailed.
5. Speed.
6. Structure-Proposition-Evaluation
7. Survey-Question-Read-Recite-Review.

SELFE CHECK FIVE

PART ONE:-TRUE /FALSE

1) Garment terms and abbreviations and clothing production terminology in fashion industry are used to communicate with factories and vendors to ensure a designer's vision is accurately translated into a physical product. Operations managers manage the process that transforms inputs into outputs.

2) Working drawings are drawings used as a reference or guide in the manufacture of a product.

3) The sealing sample must be accompanied by clear diagrammatic working drawings of front, back and side views, with enlarged details, and must have clear references to materials and trims, measurements and the positioning of wearable technology.

PART TWO LONG ANSWER

1) List out Common garment terms

2) what Garment production system and define

3) Reading Techniques or Styles are the following:

Reference

1) Patten construction of Dress and Blouse I; Prof. Dr.- Ingo. DPL.-Ingo. (FH) M. Ernst

2) Fourth Edition Helen joseph--Armstrong

3) Patten construction of Dress and Blouse I; Prof. Dr.- Ing. DPL.-Ing. (FH) M. Ernst

4) https://www.onlineclothingstudy.com

5) https://www.techwalla.com.

6) https://fashion insiders.com.

7) https://clothingindustry.blogspot.com.

8) Armstrong

9) Industrial Engineering and Production Management Mahajan 2002.

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