

# DIPLOMA IN INDUSTRIAL ENGINEERING, QUALITY AND PRODUCTION

Quality, Industrial Engineering and Production are for those who are interested to enter a career or to improve the skills in these areas within the fashion industry. Quality, Industrial Engineering and Production promotes utilisation and coordination of machines, materials and human resources to obtain a desired output with optimum utilisation of resources. At CGTI, you learn production planning, floor layout, personnel organisation, time standards, as well as wage computation to control the quantity and quality of goods produced. With the increased competition and rising cost of production, apparel manufacturers are constantly looking for leaner production methods in order to reduce costs. This requires skilled personnel with the know-how to implement productivity programmes in Industrial Engineering, Quality Assurance and Lean Tools.

## COURSE STRUCTURE

Diploma in Industrial Engineering, Quality and Production will be conducted in the form of lectures, discussions, demonstrations, case studies, practical exercises, role plays and hands-on activities.

### 14 MODULES:

1. Apparel Product Development
2. Apparel Production Sequence
3. Garment Construction
4. Introduction to Textiles
5. Production Drawing
6. Quality Assurance in the Textile and Fashion Industry
7. Workplace Skills
8. Lean Thinking
9. Social Accountability Compliance
10. Standard Minute Costing
11. Textile and Apparel Safety and Testing
12. Lean Value Stream Mapping
13. Work Study 1
14. Work study 2

## ENTRY REQUIREMENT

- Currently working in the apparel industry or aspire to work in the apparel industry
- Possess university, diploma or high school certificate
- Ability to read, write and comprehend English proficiently
- Basic computing skills and knowledge of Microsoft office

## COURSE FEE

For more details on type of Place and Train programme packages and courses fee, please contact us at (855) 23 883 435

## COURSE DURATION

Course Type	Full-Time
Total Training and Assessment Hours	406 hours
Total Number of Months	3.5 months

\*Maximum number of months factoring in holidays and scheduling conflicts.

## GRADUATION REQUIREMENTS

Student must fulfil the following requirements:

- 75% attendance rate of total training hours per module
- Assessed and be competent for every module

## CERTIFICATE ISSUANCE

Upon successful completion of the course, student will be awarded the CGTI Certification which is nationally endorsed and recognised by industry partners.

## CAREER OPPORTUNITIES

- Factory and Production Manager
- Industrial Engineers
- Work Study Officer
- Production Planner
- Work Improvement Officer
- Manufacturing Departments-In-Charge
- Merchandiser
- Quality Assurance Auditor/Inspector
- Compliance Assistant Auditor

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# MODULES SYNOPSIS

## 1. Apparel Product Development

With the growing trend of buyers asking for value-added services, only factories who can offer design and product development services can compete in the global arena. It is fast becoming a pre-requisite for factories to be able to offer such services to remain in the buyers' matrix of selected suppliers. Garment manufacturers have to develop their own product development team to meet their buyers' requirements. Factories that have already set up product development teams, would have a head start to work with buyers and designers to collaborate and better understand the buyer's needs. It is also imperative to create the most relevant collection in the shortest time for the buyers, as lead time gets shorter. Product development is not just about the creation of new samples, it has to meet the criteria and the needs of the buyers.

## 2. Apparel Production Sequence

Learn how a garment is made from pattern drafting, cutting and sewing. With the basic knowledge in drafting and sewing, you can better understand and relate mass production processes from pattern making to cutting, sewing and finishing. This course also covers basic threading of the industrial sewing machine and sewing techniques, and is a good foundation for anyone who wants to be in the apparel industry.

## 3. Garment Construction

With steep retail competition and quick style changeovers, manufacturers, retailers and buying agents are faced with the challenges of offering a wider product range, a quicker product development cycle in a shorter production lead-time. Thus, Merchandisers, Garment Technologists and Designers are required to develop designs and respective technical packages including production design that are feasible in production as well as achieve accuracy in sample interpretation. The understanding of how garments are constructed, the various seams and stitches utilization in various components within the garment is critical. Thus fundamental knowledge will reduce redundant designs that cannot be replicated in mass production and eliminate misinterpretation in sampling.

## 4. Introduction to Textiles

This subject provides a basic understanding of fibers and yarns in textiles formation. Students are taught the fundamentals of knits and weaves, and to identify fabric by names through visual identification and their intrinsic characteristics. Students' understanding of textiles include production processes and developments in the industry. Virtual field trips includes visits to mills and testing laboratory. This is a fundamental foundation for anyone in the fashion industry.

Merchandisers, Designers, Product Developers, Purchasers, Procurement Officers, Quality Control Auditors/Inspectors, Sample Makers and Production Personnel often have problems in identification of fabrics and pre-empting issues relating to materials due to the lack of material knowledge, its characteristics, limitations and the varied processes. Thus a good understanding of textiles is a critical competency required for the incumbent in the effective delivery of their job functions.

## 5. Production Drawing

This module aims to provide basic knowledge and skills to draw production drawings. It covers different garment types, details and specifications. You will learn how to draw basic production drawings and give basic descriptions.

## 6. Quality Assurance in the Textile and Fashion Industry

This module covers the major aspects of Quality in the textiles & apparel industry. Students will learn the Principles of quality management, to understand and interpret the various types of quality audit reports and how quality policies can impact the operational performance of the organization. The areas of coverage include: statistical sampling, defects classification, samples evaluation and report writing. Raw Materials, product testing and safety, color evaluation will also be introduced. Students will also have the opportunity to be engage in discussions on common quality issues and measurement deviations faced by the industry.

## 7. Workplace Skills

The module is designed to help individuals function effectively as an independent thinking adult in the workplace and focus on importance of initiative and enterprise in the context of his/her work scope, responsibility, accountability authority and expertise. This module covers area of communication, goal setting, time management, work ethics etc.

This course will help you become a better communicator and self-motivated person who is able to connect well with the different stakeholders to enhance workplace success.

## 8. Lean Thinking

The lean journey is similar to a marathon without a finish line. It's "change the mind" rather than "change the line". With today's rising costs and competitive market, this course will introduce you to the world of lean and how it can help to change the way you think and do things. This course provides an introduction to lean and gives you the foundation to develop future projects implementing lean in your workplace. When concepts are implemented as strategies, participants can be assured of higher productivity at work, reduction in the cost of the operations and an increase in profit margins. There will be a simulation of a production line to identify and eliminate wastes streamlining processes to improve productivity.

## 9. Social Accountability Compliance

Social Accountability Compliance has emerged as one of the most complex challenges in the garment industry. In recent years, a significant number of Asian vendors have failed to meet the code of conduct standards established by the buyers. Inability to meet these standards has forced hundreds of factories to close down. There are still thousands of small factories that find it difficult to do businesses with large brands as you do not know how to meet the code of conduct requirements. Buyers, on the other hand, face increasing pressure from their stakeholders in their home country and raising the bar with new demands. A factory is often faced with multiple codes of conduct and has many audit and monitoring visits. The challenge, therefore, is to ensure that you meet the code of conduct audit and stay competitive. After attending this module, students will be able to reduce the audit failure rate and minimize business risk for factories.

## 10. Standard Minute Costing

Apparel manufacturing mainly consists of cutting, sewing, assembly of sewn parts in sewing lines, finishing and packing. Line balancing within each process is one of the keys to achieving optimum production performance.

Computing standard minutes using common industry software is critical in this process. The aim of this course is to provide occupational knowledge, skills and techniques to compute standard allowed minutes (SAM) or standard of allowed hours (SAH) for apparel sewing and balance work among teams or amongst workers in lines to achieve higher efficiency. SAM or SAH or SMV is a universal tool used to compute factory efficiency & costing.

## 11. Textile and Apparel Safety and Testing

This course provides occupational knowledge on product safety and testing requirements that applies to raw material and finished garment in the fashion industry. This includes specific rules and regulations governed by the importing countries like USA and European communities not limited to testing and safety regulations. With this knowledge, it will reduce duplication in product quality testing and provide upfront information for raw material selection, to facilitate design changes to comply to importing countries regulations and eliminates misinterpretation so that the individual can make better decisions in materials management and improves communication.

## 12. Lean Value Stream Mapping

This course requires participants to have a basic understanding of lean manufacturing concepts. You will learn to assess the current state of the apparel manufacturing operational process from door to door. This methodology provides an accurate snapshot of all the value and non-value added activities in the production process, enabling you to design its future state. You can then easily focus improvements through process razing where a series of Kaizen events can be conducted to eliminate wastes, improve quality and increase productivity.

## 13. Work Study 1

With competition getting stiffer, there is a need to look at garment manufacturing as a science and not an art. This is where a great need of Garment Engineering and Work Study emerges. This course will help the designers, sample makers and garment technologists develop designs, technical specifications and manufacturing instructions that take production efficiency into consideration. Basic industrial engineering is the pre-requisite for any productivity improvement project. You cannot improve what you cannot measure.

## 14. Work study 2

This course is a continuation of Work Study 1. You have learnt how to record and study, and now you will learn to analyse and improve the methods and time required in the apparel production processes from cutting, sewing to packing. This course includes hands on activities to conduct capacity assessment, identify unit drivers, apply simultaneous engineering approach for lead-time and cost reduction and conduct value add analysis and feasibility studies. You will learn how to measure and analyse your production efficiency, and what you need to do in production in order to optimize output and increase profit potential.

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