

# The IIMQ Certified Manufacturing Manager

The Certified Manufacturing Manager (CMM) is a professional who understands the principles of Manufacturing product and service quality evaluation and control. This body of knowledge and applied technologies include, but are not limited to, development and operation of quality control systems, application and analysis of testing and inspection procedures, the ability to use metrology and statistical methods to diagnose and correct improper quality control practices, an understanding of human factors and motivation, familiarity with quality cost concepts and techniques, and the knowledge and ability to develop and administer management information systems and to audit quality systems for deficiency identification and correction.



## Education

A minimum of diploma or degree related to any field



**BODY OF KNOWLEDGE**

# The IIMQ Certified Manufacturing Manager

**Topics** in this body of knowledge (BoK) include s  
A complete description of level of education.

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## I. TQM

### A. Quality Philosophies and Foundations

Describe continuous improvement tools, including statistical process control (SPC), and total quality management, and understand how modern quality has evolved from quality control through statistical process control (SPC) to total quality management and leadership principles (including Deming's 14 POINTS )

## II. MANUFACTURING MANAGEMENT

### 1. Strategic planning

Identify and define top management's responsibility for the QMS, including establishing policies and objectives, setting organization-wide goals, and supporting quality initiatives.

### 2. Deployment techniques

Define, describe, and use various deployment tools in support of the QMS such as:

- **Benchmarking**

Define the concept of benchmarking and why it may be used.

- **Stakeholder**

Define, describe, and use stakeholder identification and analysis.

- **Performance**

Define, describe, and use performance measurement tools.

- **People management**

Define, describe, and use project management tools, including PERT charts, Gantt charts, critical path method (CPM), and resource allocation.

### Manufacturing management principles

Determine appropriate behavior in situations requiring ethical decisions.

- **Leadership Principles and Techniques**

Analyze various principles and techniques for developing and organizing teams and leading quality initiatives.

- **Facilitation Principles and Techniques**

- 1. Roles and responsibilities**

Describe the facilitator's roles and responsibilities on a team.

- 2. Facilitation tools**

Apply various tools used with teams, including brainstorming, nominal group technique

## Communication Skills

Identify specific communication methods that are used for delivering information and messages in a variety of situations across all levels of the organization using email and telephone .

## Customer Relations

Define, apply, and analyze the results of customer relation tools such as quality function deployment (QFD) and customer satisfaction surveys.

## Supplier Management

- 1. Techniques**

Apply various supplier management techniques, including supplier qualification, certification, and evaluation.

- 2. Improvement**

Analyze supplier ratings and performance improvement results.

- 3. Risk**

Understand business continuity, resiliency, and contingency planning.

## Barriers to Quality Improvement

Identify barriers to quality improvement, analyze their causes and impact, and implement methods for improvement.

# III . 5 CORE TOOLS

## A. Classification of Quality Characteristics

Define, interpret, and classify quality characteristics for new and existing products, processes, and services.

## B. Design Inputs and Review

- 1. Inputs**

Translate design inputs such as customer needs, regulatory requirements, and risk assessment into robust design using techniques such as failure mode and effects analysis (FMEA), APQP,PPAP,SPC and MSA

- 2. Review**

Identify and apply common elements of the design review process, including roles and responsibilities of participants.

## IV. LEAN MANUFACTURING

### A. Lean tools

Define, describe, and apply the following lean tools:

1. **5S /Heijunka**
2. **Value stream mapping**
3. **Kanban /Jidoka**
4. **Visual control /Andon**
5. **Waste (Muda)**
6. **Standardized work**
7. **Takt time /Kaizen**
8. **Single minute exchange of die (SMED)**

### B. Corrective Action

Identify, describe, and apply elements of the corrective action process, including problem identification, failure analysis, root cause analysis, problem correction, recurrence control, and verification of effectiveness. (Evaluate)

### C. Preventive Action

Identify, describe, and apply various preventive action tools such as error proofing/poka-yoke and robust design and analyze their effectiveness. (Evaluate)

## VI. SIX SIGMA

### Define

#### A. Voice of the Customer

1. **Customer Identification**

Identify and segment customers and show how a project will impact both internal and external customers.

2. **Customer data collection**

Identify and select appropriate data collection methods (e.g., surveys, focus groups, interviews, observations) to gather voice of the customer data. Ensure the data collection methods used are reviewed for validity and reliability.

3. **Customer requirements**

Define, select, and apply appropriate tools to determine customer needs and requirements, including critical-to-X (CTX when “X” can be quality, cost, safety, etc.), CTQ tree, quality function deployment (QFD), supplier, input, process, output, customer (SIPOC), and Kano model.

## B. Business Case and Project Charter

1. Business case  
Describe business case justification used to support projects.
2. Problem statement  
Develop a project problem statement and evaluate it in relation to baseline performance and improvement goals.

# Measure

## A. Process Characteristics

1. Process flow metrics  
Identify and use process flow metrics (e.g., work in progress (WIP), work in queue (WIQ), touch time, takt time, cycle time, throughput) to determine constraints. Describe the impact that “hidden factories” can have on process flow metrics.
2. Process analysis tools  
Select, use, and evaluate various tools, e.g., value stream maps, process maps, work instructions, flowcharts, spaghetti diagrams, circle diagrams, gemba walk.

## B. Data Collection

1. Types of data  
  
Define, classify, and distinguish between qualitative and quantitative data, and continuous and discrete data.
2. Measurement scales  
  
Define and use nominal, ordinal, interval, and ratio measurement scales.
3. Sampling  
  
Define and describe sampling concepts, including representative selection, homogeneity, bias, accuracy, and precision. Determine the appropriate sampling method (e.g., random, stratified, systematic, subgroup, block) to obtain valid representation in various situations.
4. Data collection plans and methods  
  
Develop and implement data collection plans that include data capture and processing tools, e.g., check sheets, data coding, data cleaning (imputation techniques). Avoid data collection

pitfalls by defining the metrics to be used or collected, ensuring that collectors are trained in the tools and understand how the data will be used, and checking for seasonality effects.

## C. Measurement Systems

### 1. Measurement system analysis (MSA)

Use gauge repeatability and reproducibility (R&R) studies and other MSA tools (e.g., bias, correlation, linearity, precision to tolerance, percent agreement) to analyze measurement system capability.

### 2. Measurement systems across the organization

Identify how measurement systems can be applied to marketing, sales, engineering, research and development (R&D), supply chain management, and customer satisfaction data.

### 3. Metrology

Define and describe elements of metrology, including calibration systems, traceability to reference standards, and the control and integrity of measurement devices and standards.

## D. Basic Statistics

### 1. Basic statistical terms

Define and distinguish between population parameters and sample statistics, e.g., proportion, mean, standard deviation.

### 2. Central limit theorem

Explain the central limit theorem and its significance in the application of inferential statistics for confidence intervals, hypothesis tests, and control charts.

### 3. Descriptive statistics

Calculate and interpret measures of dispersion and central tendency.

### 4. Graphical methods

Identify various elements of audit closure and any criteria that have not been met and would prevent an audit from being closed.

### 5. Valid statistical conclusions

Distinguish between descriptive and inferential statistical studies. Evaluate how the results of statistical studies are used to draw valid conclusions.

## E. Probability

### 1. Basic concepts

Describe and apply probability concepts, e.g., independence, mutually exclusive events, addition and multiplication rules, conditional probability, complementary probability, joint occurrence of events.

## F. Process Capability

### 1. Process capability indices

Define, select, and calculate  $C_p$  and  $C_{pk}$ .

### 2. Process performance indices

Define, select, and calculate  $P_p$ ,  $P_{pk}$ ,  $C_{pm}$ , and process sigma.

### 3. General process capability studies

Describe and apply elements of designing and conducting process capability studies relative to characteristics, specifications, sampling plans, stability, and normality.

### 4. Process capability for attributes data

Calculate the process capability and process sigma level for attributes data.

### 5. Process capability for non-normal data

Identify non-normal data

### 6. Process performance vs. specification

Distinguish between natural process limits and specification limits. Calculate process performance metrics,

### 7. Short-term and

long-term capability

Describe and use appropriate assumptions and conventions when only short-term data or only long-term data are available. Interpret the relationship between short-term and long-term capability.

# Analyse

## A. Measuring and Modeling Relationships Between Variables

### 1. Correlation coefficient

Calculate and interpret the correlation coefficient and its confidence interval, and describe the difference between correlation and causation.

### 2. Linear regression

Calculate and interpret regression analysis, and apply and interpret hypothesis tests for regression statistics. Use the regression model for estimation and prediction, analyze the uncertainty in the estimate, and perform a residuals analysis to validate the model.

### 3. Multivariate tools

Use and interpret multivariate tools

## B. Hypothesis Testing

# Improve

### A. Design of Experiments (DOE)

### B. Lean Methods

# Control

## A. Statistical Process Control (SPC)

### 1. Objectives

Explain the objectives of SPC, including monitoring and controlling process performance, tracking trends, runs, and reducing variation within a process.

### 2. Selection of variables

Identify and select critical process characteristics for control chart monitoring.

### 3. Rational subgrouping

Define and apply the principle of rational subgrouping.

## VI. Project management

### Project Management (PM) Tools

Identify and use the following PM tools to track projects and document their progress.

#### 1. Gantt charts

#### 2. Toll-gate reviews

#### 3. Work breakdown structure (WBS)

#### 4. RACI model (responsible, accountable, consulted, and informed)

### D. Analytical Tools

#### 1. Affinity diagrams

#### 2. Tree diagrams

3. Matrix diagrams
4. Prioritization matrices
5. Activity network diagrams

## VII. The Quality System

### ( ISO 9001 2015 /ISO 45001/ISO 14001/IATF 16949)

#### A. Elements of the Quality System ( ISO 9001 2015/ISO 45001/ISO 14001/IATF 16949)

1. **Basic elements**

Interpret the basic elements of a quality system, including planning, control, and improvement, from product and process design through quality cost systems and audit programs.

2. **Design**

Analyze the design and alignment of interrelated processes to the strategic plan and core processes.

- **Documentation of the Quality System**

1. **Document components**

Identify and describe quality system documentation components, including quality policies and procedures to support the system.

2. **Document control**

Evaluate configuration management, maintenance, and document control to manage work instructions and quality records.

- **Quality Standards and Other Guidelines**

Apply national and international standards and other requirements and guidelines, including the Malcolm Baldrige National Quality Award (MBNQA), and describe key points of the ISO 9000 series of standards. (Note: Industry-specific standards will not be tested.)

#### D. Quality Audits

1. **Types of audits**

Describe and distinguish between various types of quality audits such as product, process, management (system), registration (certification), compliance (regulatory), first, second, and third party.

2. **Roles and responsibilities in audits**

Identify and define roles and responsibilities for audit participants such as audit team (leader and members), client, and auditee. (Understand)

**3. Audit planning and implementation**

Describe and apply the stages of a quality audit, from audit planning through conducting the audit. (Apply)

**4. Audit reporting and follow-up**

Apply the steps of audit reporting and follow-up, including the need to verify corrective action. (Apply)

## **VIII. WORLD CLASS MANUFACTURING**

Identify and apply COQ concepts, including cost categorisation, data collection, reporting, and interpreting results.

## **IX. PROBLEM SOLVING METHODS**

1. Shainin techniques

2. 8 D

3. A3 and its significance

# CMM EXAM.

Computer Delivered - The CMM exam is a Multi-part exam , with 15 courses packed as one course

**Certified manufacturing manager** which includes

1. Six sigma black belt - Exam and Exercise Assessment
2. Lean manufacturing expert - Exam and Exercise Assessment
3. ISO 9001 2015 Internal auditor - Exam and Exercise Assessment
4. ISO 14001 Internal auditor - Exercise Assessment
5. ISO 45001 Internal auditor -Exercise Assessment
6. IATF Internal auditor - Exam and Exercise Assessment
7. 5 core tools - Exercise Assessment
8. Project manager - Exam and Exercise Assessment
9. TQM - Exam and Exercise Assessment
10. Management and Leadership - Exercise Assessment
11. Minitab Analytics - Exercise Assessment
12. 8 D problem solving - Exercise Assessment
13. Excel analytics
14. Shainin techniques
15. A3 problem solving - Exercise Assessment

## Frequently asked Questions (FAQ)

Q: Is it a recorded course or a live course?

A: you can select it as a recorded or live course based on your preference .

Q: How will you get support for your Questions?

A: We would be doing a LIVE Q&A session to answer each and every question,

Q: who gives certification ?

A: International institute for management and Quality (IIMQ)

Q: Can we get study materials ?

A: yes you can download the study materials

Q: When is the exam?

A: The exam would be on the last day of training module in your convenient time in IIMQ.org by online mode .

Q: How certificate will be given ?

A: The certificate can be downloaded directly from [www. IIMQ.org](http://www.IIMQ.org) as soft copy after getting the code number as mail from us .

Q: when will we get certificates ?

A:with in 2 days completing exam certificate can be downloaded from [www.Iimq.org](http://www.Iimq.org)

Q: what is the pass percentage ?

A:60%

Q: Is it open book or closed book exam ?

A:Open book

Q: What is the mode of communication ?

A: English

Q: What is the platform for course delivery ?

A: ZOOM platform

Q: What is the total hrs of course ?

A: 200 hrs of training spread across 12 months

Q: When will the course conducted ?

A: weekends on Saturdays and Sundays

Q: Got more questions?

A: we will take care of your queries in less than 4 hrs./whatsapp @9600149297

Q: What is the Methodology of training ?

A: Case studies , Exercises , discussion , software modules and simulation

# Enhance your career with IIMQ certification today!

## **Advantages**

- Application oriented learning
- Can be part of our Alumni
- Reference materials
- Study guides
- Comprehensive exam
- International recognition