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Course Name

Statistical Quality Control

Sector Name

Quality Management & Operational Excellence

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Statistical Quality Control

Course Introduction

Statistical Quality Control (SQC) is a fundamental field in statistics and industrial engineering that focuses on using statistical methods to monitor, control, and improve product and process quality. It is widely used in manufacturing, healthcare, engineering, and service industries to ensure consistency, reduce defects, and improve efficiency.

This course introduces learners to the core concepts of quality control and statistical process monitoring, including how to analyze data and detect variations in production systems. You will learn how to distinguish between common cause variation (natural process variation) and special cause variation (unexpected errors or defects that require correction).

A major focus of Statistical Quality Control is Statistical Process Control (SPC), which uses tools such as control charts (X-bar chart, R chart, P chart, and C chart) to monitor production processes in real time. These tools help organizations detect problems early before they become costly failures.

Another key area is acceptance sampling, where a sample of products is inspected to determine whether an entire batch should be accepted or rejected. This reduces inspection costs while maintaining product quality standards.

The course also covers essential statistical concepts such as mean, variance, standard deviation, and process capability, which are critical for analyzing performance and improving production systems.

By learning SQC, students and professionals gain the ability to:

✓ Improve product quality

✓ Reduce waste and defects

✓ Optimize manufacturing processes

✓ Support data-driven decision-making

Statistical Quality Control is a core part of modern quality management systems, Six Sigma, and Lean manufacturing, making it highly valuable for engineers, analysts, and operations managers.

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Target Audience

- ✓ Quality & Manufacturing Professionals – Quality managers, production engineers, and process improvement specialists.
- ✓ Engineers & Technicians – Industrial, mechanical, and manufacturing engineers, as well as lab technicians.
- ✓ Data & Process Analysts – Statisticians, data analysts, and process improvement professionals.
- ✓ Regulatory & Compliance Officers – Ensuring adherence to industry standards.
- ✓ Students & Academics – Those studying quality management, industrial engineering, or statistics.

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Learning Objectives

- ✓ Understand the principles and importance of statistical quality control in achieving process excellence.
- ✓ Apply statistical techniques for data collection, analysis, and interpretation in quality control.
- ✓ Use statistical process control (SPC) methods to monitor and control process variability.
- ✓ Apply control charts and other statistical tools to identify and address quality issues.
- ✓ Implement statistical quality control methods to improve process performance and customer satisfaction.
- ✓ Identify and apply advanced quality control tools.

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Statistical Quality Control

Course Outline

✓ 01 DAY ONE

Introduction to Statistical Quality Control

- ✓ Overview of statistical quality control and its significance
- ✓ Key principles and concepts of quality control
- ✓ Introduction to data collection and sampling techniques
- ✓ Statistical distributions and probability concepts for quality control

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Statistical Quality Control

Course Outline

✓ 02 DAY TWO

Statistical Process Control (SPC) and Control Charts

- ✓ Understanding process variability and its impact on quality
- ✓ Introduction to statistical process control (SPC) and control charting
- ✓ Construction and interpretation of control charts (e.g., X-bar and R charts)
- ✓ Applying control charts for process monitoring and improvement

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Statistical Quality Control

Course Outline

✓ 03 DAY THREE

Statistical Tools for Quality Control

- ✓ Hypothesis testing for quality control decisions
- ✓ Capability analysis and process performance metrics
- ✓ Design of experiments (DOE) for process optimization
- ✓ Applying statistical tools for root cause analysis and problem-solving

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Statistical Quality Control

Course Outline

✓ 04 DAY FOUR

Advanced Tools for Quality Control

- ✓ Advanced control charts such as the p-chart, np-chart, and c-chart.
- ✓ Scenarios where these specialized control charts are more suitable than traditional X-bar and R charts.
- ✓ Examples of real-world applications for advanced control charts in different industries.
- ✓ The six sigma methodology and its focus on process improvement and defect reduction.
- ✓ The DMAIC (define, measure, analyze, improve, control) framework for problem-solving and continuous improvement.
- ✓ The roles of the different six-sigma belts and how they contribute to quality control initiatives.

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
Aug. 24, 2026	Aug. 27, 2026	4 days	4250.00 $	UAE , Dubai
Feb. 1, 2027	Feb. 4, 2027	4 days	4250.00 $	UAE , Abu Dhabi
May 3, 2027	May 6, 2027	4 days	4950.00 $	France , Paris
Jan. 4, 2027	Jan. 7, 2027	4 days	4250.00 $	UAE , Dubai

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