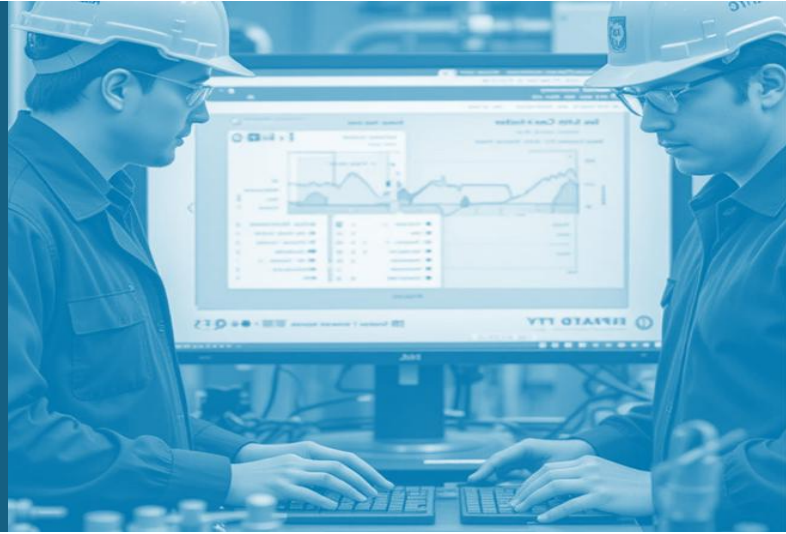# MSTC

PROCESS OPTIMIZATION AND DE-BOTTLENECKING

COURSE OVERVIEW

This course provides a comprehensive framework for enhancing operational efficiency and throughput in process systems. Participants will learn to identify, analyze, and eliminate bottlenecks using data-driven techniques and analytical tools. The curriculum covers foundational concepts, KPI monitoring, Lean and Six Sigma principles, statistical analysis, and various de-bottlenecking strategies, including automation and simulation. The aim is to equip attendees with practical methods to increase capacity, reduce waste, and sustain continuous improvement in their industrial processes..

DATES, VENUES AND FEES

07 – 11 December 2025 - Doha
(5 Days)

Fees   US$ 4500

Note: Fee is per participant.
Groups from the same company can enjoy a **discounted** price.

WHO SHOULD ATTEND?

This course is appropriate for a wide range of professionals but not limited to:

- Process Engineers
- Planning Engineers
- Production Engineers
- Operation Engineers
- Project Engineers
- Maintenance Engineers
- Technical Staff involved in Process Optimization and De-Bottlenecking

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MSTC

ACCREDITATION

This training course is certified by CPD.

The CPD Certification Service is the leading independent CPD accreditation institution operating across industry sectors to complement the Continuing Professional Development policies of professional institutes and academic bodies. The CPD Certification Service provides support, advice, and recognised independent CPD accreditation compatible with global CPD principles. CPD is the term used to describe the learning activities professionals engage in to develop and enhance their abilities and keep skills and knowledge up to date. CPD Units are only awarded to programmes after each programme is scrutinised to ensure integrity and quality according to CPD standards and benchmarks.

COURSE CERTIFICATE

MSTC certificate will be issued to all attendees completing a minimum of 80% of the total tuition hours of the course.

CPD internationally recognized certificate will be issued for all participants who will meet the course requirements.
CPD certificates will be issued within a month of the successful completion of the course.

TRAINING METHODOLOGY

- Expert instructor lecture, input using numerous visual aids
- Supportive comprehensive course manual enabling practical application and reinforcement
- Participant discussion and involvement regarding their specific projects and challenges
- Real-world case studies and best practices

LEARNING OBJECTIVES

By the end of this course, participants should be able to:

- Build foundational knowledge of process systems, performance indicators, and bottleneck identification
- Equip participants with analytical tools and data-driven techniques to detect and measure bottlenecks
- Explore and apply strategies to increase capacity and reduce waste
- Apply targeted methods to increase throughput by eliminating or mitigating bottlenecks
- Learn how to implement improvements effectively and sustain gains

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Website: www.mstcme.com

COURSE OUTLINE

DAY 1

Fundamentals of Process Optimization & Bottlenecks
- Pre-test
- Introduction to Process Optimization
- Definition and Impact of Bottlenecks
- Key Performance Indicators (KPIs): Throughput, Cycle Time, Yield, OEE
- Process Mapping and Flow Diagrams (SIPOC, Value Stream Mapping)
- Introduction to Lean and Six Sigma Principles
- Constraints vs. Non-Constraints (Theory of Constraints)
- Case Study

DAY 2

Bottleneck Identification and Analysis Tools
- Types of Bottlenecks: Equipment, Labor, Material, Control, Information
- Time Studies and Cycle Time Analysis
- Data Collection and Process Monitoring Tools
- Statistical Tools:
  - Pareto Analysis
  - Control Charts
  - Process Capability Analysis
- Root Cause Analysis Techniques (5 Whys, Fishbone Diagrams)
- Exercise

DAY 3

Process Optimization Techniques
- Process Simplification and Standardization
- Load Balancing and Line Balancing
- Equipment Reliability and Maintenance Strategies
- Inventory Optimization (WIP, Raw Materials)
- Energy and Resource Efficiency
- Continuous Flow and Just-In-Time Concepts
- Case Study

DAY 4

De-Bottlenecking Strategies and Technologies
- De-Bottlenecking Principles and Strategy Development
- Capacity Expansion Options: Equipment Upgrade, Parallelization, Scheduling
- Automation and Digitalization: SCADA, IoT, Digital Twins
- Process Simulation and Modeling Tools (overview of Aspen, Arena, or FlexSim)
- Economic Evaluation: ROI, Payback, Risk Assessment
- Case Study

DAY 5

Implementation, Monitoring, and Continuous Improvement
- Change Management and Stakeholder Engagement
- Implementation Roadmaps and Pilot Testing
- Performance Monitoring and Feedback Loops
- Use of Dashboards and KPIs for Sustained Optimization
- Building a Culture of Continuous Improvement
- Documentation and Reporting Best Practices
- Course Review and Final Q&A
- Post test
- Feedback and certification ceremony

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