SPARC
ENGINEERS

Lean Six Sigma Yellow Belt – Body of Knowledge

1. Introduction to Lean Six Sigma
- History and purpose of Lean Six Sigma
- Difference between Lean and Six Sigma
- Benefits of combining Lean and Six Sigma
- Introduction to the Theory of Constraints
- Roles and responsibilities:
    - Yellow Belt
    - Green Belt
    - Black Belt
    - Master Black Belt
    - Project Champion

2. Lean Fundamentals
- Waste reduction versus variation reduction
- Lean as a waste-reduction approach
- Six Sigma as a variation-reduction approach
- Relationship between PDCA and DMAIC
- Value-added versus non-value-added work

3. The 8 Wastes

4. Standard Work

5. Visual Management and 5S

6. Push versus Pull Systems
- Difference between push and pull systems
- Relationship between pull systems, Kanban, Just-in-Time, and flow

7. PDCA and Kaizen

8. DMAIC Framework
- Define
- Measure
- Analyze
- Improve
- Control
- DMAIC as the core Six Sigma improvement structure
- DMAIC as a continuous improvement cycle

9. Define Phase
- Voice of the Customer, or VOC
- SIPOC diagram
- Problem statement

- Project charter
- Stakeholder analysis
- Understanding customer needs and project alignment

10. Problem Statement, Charter, and Stakeholders

- Creating a clear, fact-based problem statement
- Defining the gap between current state and desired state
- Project charter components
- Stakeholder analysis and engagement planning
- Stakeholder power-interest matrix

11. Measure Phase

- Process mapping
- Data collection planning
- Types of data
- Basic metrics:
  - Cycle time
  - Takt time
- Understanding current process performance before improving it

12. Data Collection

- Planning what data is needed and why
- Identifying data sources and collection methods
- Assigning responsibility and timing
- Quantitative versus qualitative data
- Continuous, discrete, nominal, and ordinal data
- Using data to support fact-based decisions

13. Analyze Phase

- Root cause analysis
- Fishbone diagrams
- 5 Whys
- Pareto charts
- Prioritization matrix
- Introduction to deeper tools covered in Green and Black Belt courses, such as hypothesis testing and FMEA

14. Root Cause Analysis and 5 Whys

- Difference between symptoms and root causes
- Using RCA to prevent recurring problems
- 5 Whys as a simple questioning method
- Importance of digging below surface-level explanations

15. Fishbone, Pareto, and Prioritization

- Fishbone, or Ishikawa, diagrams

- Organizing possible causes of a problem
- Pareto charts and the 80/20 principle
- Prioritization matrix
- Effort-impact matrix
- Weighted criteria matrix

16. Improve Phase

- Brainstorming solutions
- Kaizen events

17. FMEA and Poka-Yoke

- Introduction to Failure Modes and Effects Analysis
- Identifying possible failures, effects, and causes
- Severity, occurrence, and detection
- Risk Priority Number, or RPN
- Using FMEA to prevent problems before they occur
- Poka-yoke as mistake-proofing

18. Control Phase

- Control plans
- Process documentation
- Introduction to control charts
- Sustaining improvement
- Preventing process drift after improvements are made

19. Process Documentation

- Standard operating procedures
- Work instructions
- Forms
- Documenting the current and improved process
- Supporting training, consistency, and sustainment

20. Control Charts and Sustaining Improvement

- Purpose of control charts
- Center line, upper control limit, lower control limit, and data points
- Common cause versus special cause variation
- Avoiding overreaction to normal variation
- Sustaining change