LEAN6SIGMAPRO - Green Belt Course Content

Topic	LEAN6SIGMAPRO	TUV SUD	IASSC	ASQ	EXEMPLAR GLOBAL	KPMG
Lean						
1.0 Introduction to Lean	✓	✓	✓	✓	✓	✓
2.0 What is Lean & Application of Lean	✓	✓	✓	✓	✓	✓
3.0 5S Before Lean(Simulation to Understand)	✓	✓	✓	✓	✓	✓
4.0 Types of Waste–(Videos &Simulation to Understand)	✓	✓		✓	✓	✓
4.1 Different Types of Wastes	✓	✓	✓	✓	✓	✓
4.2 Causes of Waste	✓	✓		✓	✓	✓
4.3 Remedies of Waste	✓	✓				
5.0 Lean Principles Introduction	✓	✓	✓	✓		✓
5.1 Identify Customers & Specify Value	✓	✓	✓	✓	✓	✓
5.2 Value Stream Mapping	✓	✓	✓	✓	✓	✓
5.3 Create Flow	✓	✓	✓	✓		✓
5.4 Respond to Pull	✓	✓	✓	✓		✓
5.5 Pursuit Perfection	✓	✓	✓	✓		✓
6.0 Identify Customers & Specify Value	✓	✓	✓	✓	✓	✓
6.1 Customer–Internal & External	✓	✓	✓	✓	✓	✓
6.2 Value Added & Non-Value Added (Simulation to Understand)	✓	✓	✓	✓	✓	✓
7.0 Create Value Stream Mapping (VSM)(Simulation to Understand)	✓	✓	✓	✓	✓	✓
7.1 Terminologies (CT, FTY, RTY, CO, TPT, WIP, WIQ)	✓	✓	✓	✓	✓	✓
7.2 Process Efficiency	✓	✓	✓	✓	✓	✓
7.3 Customer Takt time	✓	✓	✓	✓	✓	✓
7.4 Create VSM (Simulation to Understand)	✓	✓	✓	✓	✓	✓
8.0 Create Value Stream Design (VSD) (Simulation to Understand)	✓	✓				
9.0 Create Flow & Respond to Pull (Simulation to Understand)	✓	✓		✓		✓
9.1 Single Piece Flow (Simulation to Understand)	✓	✓		✓		✓

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Lean						
9.2 Single Minute of Exchange of Dies (Simulation to Understand)	✓	✓		✓		✓
9.3 Line Balancing (Simulation to Understand)	✓	✓		✓		✓
9.4 Kanban (Pull Production) (Simulation to Understand)	✓	✓	✓	✓		✓
9.5 Heijunka (Production Levelling) (Simulation to Understand)	✓	✓		✓		✓
9.6 Just In Time (Simulation to Understand)	✓	✓		✓		✓
10.0 Additional Lean Tools	✓	✓	✓	✓	✓	✓
10.1 Spaghetti Diagram	✓			✓		
10.2 Circle Diagram	✓			✓		
10.3 Total Productive Maintenance & OEE	✓	✓		✓	✓	
10.4 Andon & Visual Management	✓	✓		✓		
10.5 Visual Factory	✓	✓		✓		
10.6 Gemba	✓	✓		✓		
10.7 Hoshin Kanri (Policy Deployment)	✓			✓		
10.8 PDCA (Plan Do Check Act)	✓	✓				
10.9 Poka-Yoke (Mistake Proofing) (Simulation to Understand)	✓	✓	✓	✓	✓	✓
10.10 Root Cause Analysis	✓	✓		✓		✓
10.11 Standardized Work(Simulation to Understand)	✓	✓		✓	✓	✓
10.12 Theory of Constraints (Introduction)	✓	✓		✓		
10.13 Lean Enterprise	✓		✓			
10.14 Lean value chain	✓			✓		

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Intro						
1.0 Introduction to Quality	✓	✓		✓		
2.0 Quality Leaders (Juran, Deming, Shewhart, Ishikawa) (Videos to Understand)	✓	✓		✓		
3.0 Cost of Quality (COQ)	✓	✓			✓	
4.0 Cost of Poor Quality (COPQ) (Videos to Understand)	✓	✓	✓	✓	✓	
5.0 Optimum Quality Levels	✓	✓				
6.0 Failure Mode & Effect Analysis (FMEA)	✓	✓	✓	✓	✓	✓
6.1 Create Process FMEA (Videos to Understand)	✓	✓	✓	✓	✓	✓
6.2 Create Design FMEA	✓		✓	✓		
7.0 Key Business Drivers & their Impact	✓	✓		✓		
7.1 Profit/Margin (Practice to Understand)	✓	✓		✓		
7.2 Market Share	✓	✓		✓		
7.3 Customer Satisfaction	✓	✓		✓		
7.4 Product Differentiation	✓	✓		✓		
7.5 Cost Benefit Analysis (CBA)	✓	✓	✓			
7.6 Hard & Soft Benefits (Practice to Understand)	✓	✓				
7.7 Cost avoidance & Cost reduction (Practice to Understand)	✓	✓				
8.0 Organization Goals & Six Sigma	✓	✓		✓	✓	
9.0 Six Sigma & Balanced Score card	✓			✓		
10.0 History & Evolution of Six Sigma	✓	✓	✓	✓		
11.0 Continuous Improvement / Kaizen blitz	✓	✓	✓	✓		✓
12.0 Basics of Six Sigma (Simulation to Understand)	✓	✓	✓	✓		
12.1 The Problem Solving Strategy Y = f(x) (IASSC) - (Topic to be added in Web)	✓	✓	✓		✓	✓
13.0 Six Sigma Applications	✓	✓		✓		

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Intro						
14.0 Types of Six Sigma Projects	✓	✓	✓	✓	✓	✓
14.1 DMAIC	✓	✓	✓	✓	✓	✓
14.2 DFSS / DMADV / IDOV	✓			✓		
15.0 Change Management (Simulation & Videos to Understand)	✓	✓				
16.0 Six sigma Indicator	✓				✓	

Topic	LEAN6SIGMAPRO	TUV SUD	IASSC	ASQ	EXEMPLAR GLOBAL	KPMG
Define						
1.0 Voice of Customer & Business(Simulation to Understand)	✓	✓	✓	✓	✓	✓
1.1 Collect Customer & Business Voices	✓	✓	✓	✓	✓	✓
1.2 Eliminate Vagueness Ambiguity	✓	✓	✓	✓	✓	✓
1.3 VOC Clarity Table	✓	✓	✓	✓	✓	✓
2.0 Kano Model (Practice to Understand)	✓	✓			✓	
3.0 Benchmarking	✓	✓		✓	✓	
3.1 Competitive	✓	✓		✓	✓	
3.2 Collaborative	✓	✓		✓	✓	
3.3 Best Practices	✓	✓		✓	✓	
4.0 Customer Requirements to Process Requirements	✓	✓	✓	✓	✓	✓
4.1 Critical to X (X-Quality, Cost, Safety or any other)	✓	✓	✓	✓	✓	✓
4.2 CTQ Drill Down	✓	✓	✓	✓	✓	✓
4.3 Quality Function Deployment	✓	✓		✓	✓	
5.0 Project Section (Practice to Understand)	✓	✓		✓	✓	
6.0 Process Owners & Stakeholder Analysis	✓	✓		✓		✓

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Topic	LEAN6SIGMAPRO	TUV SUD	IASSC	ASQ	EXEMPLAR GLOBAL	KPMG
Define						
7.0 Project Charter (Practice to Understand)	✓	✓	✓	✓	✓	✓
7.1 Business Case	✓	✓	✓	✓	✓	✓
7.2 Problem Statement	✓	✓	✓	✓	✓	✓
7.4 Project Team	✓	✓	✓	✓	✓	✓
7.5 Project Timeline	✓	✓	✓	✓	✓	✓
7.6 Project Scope	✓	✓	✓	✓	✓	✓
7.7 Expected Benefits	✓	✓	✓	✓	✓	✓
7.8 Project Communication	✓	✓		✓		
8.0 Financial Evaluation	✓	✓	✓	✓	✓	✓
9.0 Develop Project Metrics	✓	✓	✓	✓	✓	✓
10.0 Project Short & Long Terms Gain (Practice to Understand)	✓	✓	✓			✓
11.0 Project Risk Analysis	✓	✓		✓	✓	
12.0 Project Roles & Responsibilities	✓	✓	✓	✓	✓	
13.0 Project Team Dynamics	✓	✓		✓		
13.1 Forming	✓	✓		✓		
13.2 Storming	✓	✓		✓		
13.3 Norming	✓	✓		✓		
13.4 Performing	✓	✓		✓		
13.5 Adjourning	✓			✓		
13.6 Group Thinking	✓			✓		
13.7 Team Communication & Tools	✓			✓		
13.8 Identify and help resolve negative dynamics - overbearing, dominant, or reluctant participants	✓			✓		
13.9 The unquestioned acceptance of opinions as facts, groupthink, feuding, floundering, the rush to accomplishment, attribution, discounts, digressions, and tangents.	✓			✓		

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Define						
14.0 Project Management & Analytical Tools	✓	✓		✓	✓	
14.1 Gantt Charts	✓	✓		✓	✓	
14.2 Interrelationship Diagram	✓	✓		✓		
14.3 Process Decision Program Chart (PDPC)	✓	✓		✓		
14.4 Work Breakdown Structure	✓	✓		✓	✓	
14.5 Critical Path Method (CPM) (Simulation to Understand)	✓	✓		✓		
14.6 Project Evaluation & Review Technique	✓	✓		✓		
14.7 RACI model	✓	✓			✓	
14.8 Activity Network Diagram	✓	✓		✓		
14.9 Tree Diagram	✓	✓		✓		
14.10 Matrix Diagram - Prioritization Matrices	✓	✓		✓		✓
14.11 Project Documentation	✓	✓	✓	✓	✓	✓
15.0 Project Scope (Using process maps, pareto chart & other Quality tools)	✓			✓	✓	✓
16.0 SIPOC & Process Mapping (Simulation to Understand)	✓	✓	✓	✓	✓	✓
16.1 Process Elements - Define and describe process components and boundaries. Recognize how processes cross various functional areas and the challenges that result for process improvement efforts.	✓			✓		
17.0 Service Delivery Modelling	✓				✓	
18.0 Project Tool Gate Review	✓	✓		✓		✓

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Topic	LEAN6SIGMAPRO	TUV SUD	IASSC	ASQ	EXEMPLAR GLOBAL	KPMG
Measure						
1.0 Process Analysis & Documentation	✓	✓		✓	✓	✓
1.1 Process Flow Charts	✓	✓	✓	✓	✓	✓
1.2 Work Instructions &Gap Analysis	✓			✓		
2.0 Types of Data & Measurement Scale (Simulation to Understand)	✓	✓	✓	✓	✓	✓
2.1 Continuous (Variable) Data	✓	✓	✓	✓	✓	✓
2.2 Discrete (Attribute) Data	✓	✓	✓	✓	✓	✓
2.3 Nominal Data	✓	✓		✓		✓
2.4 Ordinal Data	✓	✓		✓		✓
2.5 Interval Measurement	✓			✓		✓
2.6 Ratio Measurement	✓			✓		✓
3.0 Population & Sampling	✓	✓	✓	✓	✓	✓
3.1 Basics of Sampling	✓	✓	✓	✓	✓	✓
3.2 Sample Size	✓	✓	✓		✓	✓
4.0 Type of Samples (Simulation to Understand)	✓	✓	✓	✓		✓
4.1 Random Sample	✓	✓	✓	✓		✓
4.2 Systematic Sample	✓	✓	✓	✓		✓
4.3 Stratified Sample	✓	✓	✓	✓		✓
5.0 Basics of Statistics (Simulation to Understand)	✓	✓	✓	✓		✓
5.1 Central Tendency	✓	✓	✓	✓		✓
5.2 Dispersion	✓	✓	✓	✓		✓
5.3 Proportion	✓	✓	✓	✓		✓
6.0 Introduction to Statistical Software (Minitab)	✓	✓				✓
6.1 Minitab Practice	✓	✓				✓
6.2 Descriptive Statistics	✓	✓	✓	✓	✓	✓
6.3 Inferential statistics	✓	✓	✓	✓	✓	✓

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Measure						
7.0 Statistical Distributions (Practice to Understand)	✓	✓	✓	✓	✓	✓
7.1 Normal	✓	✓	✓	✓	✓	✓
7.3 Binomial	✓	✓	✓	✓	✓	✓
7.3 Poisson	✓	✓	✓	✓	✓	✓
7.4 Chi-Square	✓		✓	✓	✓	✓
7.5 Student's T	✓	✓	✓	✓	✓	✓
7.6 F distribution	✓	✓	✓	✓	✓	✓
8.0 Basics of Probability (Practice to Understand)	✓	✓	✓	✓	✓	✓
8.1 Permutations & Combinations	✓			✓		
8.2 Mutually exclusive events	✓			✓		
8.3 Multiplication rules	✓			✓		
8.4 Frequency Distribution	✓	✓	✓	✓	✓	✓
8.5 Cumulative Frequency Distribution	✓	✓	✓	✓	✓	✓
8.6 Inverse Cumulative Frequency Distribution	✓	✓	✓	✓	✓	✓
9.0 Central Limit Theorem (Simulation to Understand)	✓	✓	✓	✓		✓
10.0 Measurement & Data Collection	✓	✓	✓			✓
10.1 What is Measurement	✓	✓	✓			✓
10.2 Operation Definition	✓	✓	✓			✓
10.3 Data Collection Plan (Simulations to Understand)	✓	✓	✓		✓	✓
11.0 Graphical Analysis (Practice to Understand)	✓	✓	✓	✓		✓
11.1 Pareto	✓	✓	✓	✓	✓	✓
11.2 Scatter Plot	✓	✓		✓	✓	✓
11.3 Box Plot	✓	✓		✓	✓	✓
11.4 Histogram	✓	✓		✓	✓	✓
11.5 Stem & Leaf Plots	✓	✓		✓		✓
11.6 Time Series Plot	✓					

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Measure						
11.7 Run Chart	✓				✓	
11.8 Trend Chart	✓				✓	
11.9 Normality (using Minitab)	✓	✓	✓	✓	✓	✓
11.10 Graphical Summary	✓	✓		✓	✓	✓
12.0 Variation & Measurement System Analysis	✓	✓	✓	✓	✓	✓
12.1 Understanding Variations (Simulation to Understand)	✓	✓	✓	✓	✓	✓
12.2 Measurement System Analysis (MSA)	✓	✓	✓	✓	✓	✓
12.2.1 Discrimination	✓	✓			✓	✓
12.2.2 Accuracy	✓	✓	✓	✓	✓	✓
12.2.3 Precision	✓	✓	✓	✓	✓	✓
12.2.4 Stability	✓	✓	✓	✓	✓	✓
12.3 GRR for Continuous Data (Simulation to Understand)	✓	✓	✓	✓	✓	✓
12.4 GRR for discrete Data (Simulation to Understand)	✓	✓	✓	✓	✓	✓
12.5 Control Charts & Stability (Simulation to Understand)	✓	✓	✓	✓	✓	✓
13.0 Baseline Process Performance (Practice to Understand)	✓	✓	✓	✓	✓	✓
13.1 Baseline Discrete Data (DPU, DPO,DPMO)	✓	✓	✓	✓	✓	✓
13.2 Baseline Continuous Data (Cp, Cpk, Pp, Ppk, Cpm)	✓	✓	✓	✓	✓	✓
13.3 Sigma Value (Short term & Long term)	✓			✓	✓	
13.4 Sigma Shifts (Short term Vs Long term)	✓			✓	✓	
14.0 Process Capability in Detail (Practice to Understand)	✓	✓	✓	✓	✓	✓
14.1 Natural Process Limits & Specification Limits	✓	✓	✓	✓	✓	✓
14.2 Design & Conducting Process Capability Studies	✓	✓	✓	✓	✓	✓
14.3 Specifications, Sampling Plan, Stability & Normality	✓	✓	✓	✓	✓	✓

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Measure						
14.4 Capability for Normal & Non-Normal Data	✓		✓			
14.5 Process Performance (PPM, DPU, DPMO)	✓	✓	✓	✓	✓	✓
14.6 Transformations (Box-Cox & Johnson transformation)	✓	✓	✓	✓		✓

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Analyze						
1.0 Identify Potential Causes (Practice to Understand)	✓	✓	✓	✓	✓	✓
1.1 Brainstorming	✓	✓			✓	✓
1.2 Affinity Diagram	✓	✓		✓	✓	✓
1.3 Cause & Effect Diagram	✓	✓	✓	✓	✓	✓
1.4 Five Whys?	✓	✓		✓	✓	✓
2.0 Process Analysis	✓	✓	✓	✓	✓	✓
2.1 Value Stream Mapping (Recap from Lean)	✓	✓	✓	✓	✓	✓
3.0 Data Analysis	✓	✓	✓	✓	✓	✓
4.0 Normal Curve & Normality Test(Practice to Understand)	✓	✓	✓	✓	✓	✓
5.0 Confidence Interval, Risk, P value	✓	✓	✓	✓		✓
6.0 Hypothesis Testing -Null & Alternate	✓	✓	✓	✓	✓	✓
7.0 Alpha & Beta Risks (Practice to Understand)	✓	✓	✓	✓	✓	✓
8.0 Hypothesis with Normal Data(Practice to Understand)	✓	✓	✓	✓	✓	✓
8.1 1 Sample T	✓	✓	✓	✓	✓	✓
8.2 2-Sample T	✓	✓	✓	✓	✓	✓
8.3 Paired T	✓	✓		✓	✓	✓
8.4 One-Way Anova	✓	✓	✓	✓	✓	✓
8.5 Test of Variance	✓	✓	✓	✓	✓	✓

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Analyze						
9.0 Hypothesis with Non- Normal Data(Practice to Understand)	✓	✓	✓			
9.1 1 Sample Sign	✓	✓	✓			
9.2 1 Sample Wilcoxon	✓	✓	✓			
9.3 Mann-Whitney	✓	✓	✓			
9.4 Kruskal-Wallis	✓	✓	✓			
9.5 Mood's Median	✓	✓	✓			
9.6 Friedman	✓		✓			
10.0 Hypothesis with Discrete Data (practice to Understand)	✓	✓	✓	✓	✓	✓
10.1 1Proportion	✓	✓	✓	✓	✓	✓
10.2 2Proportions	✓	✓	✓	✓	✓	✓
10.3 Chi-Square	✓	✓	✓	✓	✓	
11.0 Multi Vari chart (Practice to Understand)	✓	✓	✓	✓		
12.0 Correlation & its Terminologies	✓	✓	✓	✓	✓	✓
13.0 Correlation & Causation	✓	✓		✓	✓	✓
14.0 Linear Regression Analysis (Practice to Understand)	✓	✓	✓	✓	✓	✓
15.0 Non- Linear Regression	✓		✓			
16.0 Residual Analysis	✓		✓			
17.0 Design of Experiments	✓	✓		✓	✓	
17.1 Need for DOE	✓	✓		✓	✓	
17.2 Factors, Levels, Response, Treatment	✓	✓		✓	✓	
17.3 Blocks, Randomization, Effects, Repetition & Replication	✓	✓		✓	✓	
17.4 DOE Plots: Main Effect & Interaction Plots	✓	✓		✓		
17.5 Full Factorial Experiment (Practice to Understand)	✓	✓				
18.0 Multiple Correspondence Analysis (MCA)	✓				✓	

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Improve						
1.0 Generate & Evaluate Ideas (Simulations to Understand)	✓	✓		✓	✓	✓
1.1 Brain Storming	✓	✓		✓	✓	✓
1.2 SCAMPER	✓	✓				✓
1.3 Benchmarking	✓	✓		✓		✓
1.4 Lean Solutions	✓	✓	✓	✓		✓
1.5 TRIZ (Introduction)	✓	✓				
2.0 Selecting Best Solution (Practice to Understand)	✓	✓		✓	✓	✓
2.1 Multi-Voting	✓	✓		✓	✓	✓
2.2 Pay-off Matrix	✓	✓			✓	✓
2.3 Criteria Matrix	✓	✓			✓	✓
3.0 Error Proofing	✓	✓	✓	✓	✓	✓
3.1 Prevention & Detection	✓	✓	✓	✓	✓	✓
3.2 Mistake Proofing & Examples	✓	✓	✓	✓	✓	✓
4.0 Assess Risk Failure Mode and Effect Analysis (FMEA)	✓	✓	✓	✓	✓	
4.1 Process FMEA	✓	✓	✓	✓	✓	
4.2 Design FMEA	✓		✓	✓		
5.0 Piloting & Implementation	✓	✓				✓
5.1 Pilot Solutions	✓	✓				✓
5.2 Pilot Location	✓	✓				✓
5.3 Pilot Success Criteria	✓	✓				✓
6.0 Implementation	✓	✓				✓
6.1 Plan for Implementation	✓	✓				✓
6.2 Stakeholder Analysis	✓	✓				✓
6.3 Communication Plan	✓	✓				✓
6.4 Implementation	✓	✓				✓

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Control						
1.0 What is Process Control?	✓	✓		✓	✓	✓
2.0 Different Types of Process Controls	✓	✓		✓	✓	✓
3.0 Response Plan & Reaction Plan	✓	✓	✓			✓
3.1 Data Collection for SPC	✓	✓	✓		✓	✓
4.0 Statistical Process Control (Practice to Understand)	✓	✓	✓	✓	✓	✓
4.1 Monitoring, Controlling of Process Performance	✓	✓	✓	✓	✓	✓
4.2 Identify & Select Critical Process Parameters	✓	✓	✓	✓	✓	✓
4.3 Subgrouping & Rational Subgrouping	✓	✓	✓	✓	✓	✓
4.4 SPC-Continuous Data (I-MR, X bar R, X bar S, Cu Sum, EWMA, Median)	✓	✓	✓	✓	✓	✓
4.5 SPC–Discrete Data (C, U, P, NP charts)	✓	✓	✓	✓	✓	✓
5.0 Control Plan	✓	✓	✓	✓	✓	✓
6.0 Visual Control	✓	✓	✓	✓	✓	✓
7.0 Sustain Improvements	✓	✓	✓	✓	✓	✓
7.1 Lesson Learnt	✓	✓				✓
7.2 Documentation	✓	✓	✓	✓	✓	✓
7.3 Trainings	✓	✓	✓	✓	✓	✓
7.4 Ongoing Evaluation	✓	✓	✓	✓	✓	✓
8.0 Benefit Computation	✓	✓	✓	✓	✓	✓
9.0 Project Closure	✓	✓	✓	✓	✓	✓
10.0 Celebration	✓	✓				✓