



LEAN
SOLUTIONS
ACADEMY

Lean Six Sigma Black Belt Project Requirements and Evaluation



Purpose:	For students to demonstrate proficiency in the Lean Black Belt body of knowledge across all five phases of the DMAIC project framework.
Instructions:	A summary of the DMAIC project must be submitted to Lean Solutions Academy in the form of a PowerPoint (or equivalent) presentation that illustrates how the student was able to successfully apply the concepts learned in class. The presentation should include approximately 1-3 slides per DMAIC phase. For students: Complete a project that includes all the requirements in the “Requirement” column. Be sure to note which requirements are optional or have options related to them. You can see how each requirement will be evaluated in the “Evaluation Criteria” column. For evaluators: Review the student submission. For each DMAIC phase, ensure each requirement has been met by answering each of the evaluation questions in the “Evaluation Criteria” column. Check either of the “Pass” or “Fail” columns and add any necessary notes in the “Notes” column for each criteria row.

Phase: Define

Row #	Requirement	Evaluation Criteria	Evaluation (Check Whichever Applies)		
			Pass	Fail	Notes
1	Define the business case, including a problem statement, target or goal, and the consequences of the problem	The problem statement must pass each of the following evaluations: Does the problem statement include only 1 problem?			
2		Does the problem statement identify the consequences of the problem?			
3		Does the problem statement identify where the problem is occurring?			

4		Does the problem statement identify when the problem is occurring?			
5		Does the problem statement avoid assigning cause?			
6		The target or goal must pass the following evaluations: The target passes the SMART test			
7		The benefits/consequences must pass the following evaluations: - The business benefits of solving the problem have been defined OR... - The consequences of not solving the problem have been defined			
8	Create a high-level current-state process map <u>OR</u> SIPOC	The high-level current-state process map must pass the following evaluations: Does the map document the main steps in the process?			
9		Does the map document the main decision points in the process?			
10		The SIPOC must pass the following evaluations: Is the entire process defined?			
11		Are the inputs defined for each process activity?			
12		Are the suppliers defined for each input?			

13		Are the outputs defined for each process activity?			
14		Are the customers defined for each output?			
15	Define the voice of the customer using quality function deployment (QFD or House of Quality) <u>OR</u> critical to quality tree	The voice of the customer must pass the following evaluations: Are the customer requirements defined?			
16		Is each requirement defined in a measurable way?			
17	Develop a project charter	The project charter must include the following features: Problem statement			
18		Start date & desired end date			
19		Primary metric that passes the SMART test			
20		Scope (See rows 10-14)			
21		Name of Champion			
22		Name of Black Belt			
23		Names of team members			
24		Names of stakeholders			
	Phase: Measure				
Row #	Requirement	Evaluation Criteria	Evaluation (Check Whichever Applies)		
			Pass	Fail	Notes
25	Determine a primary metric	Primary metric that passes the SMART test (see row 17)			
26	Create a detailed process map	The process map must pass the following evaluations: Does the map document each step in the process?			
27		Does the map document each meaningful decision point in the process?			

28		Does the map document any parallel activities?			
29		Does the map include who is responsible for each step in the process, including decision points?			
30	Identify all possible X's using a fishbone diagram	The fishbone diagram must pass the following evaluations: The causes don't include symptoms			
31		Each cause is placed in at least one category			
32	Narrow the possible X's to probable X's using one or more of: - Pareto analysis - FMEA	The Pareto analysis must pass the following evaluations: The Pareto chart analyzes information relative to the primary metric			
33		The Pareto chart identifies the causes leading to approx. 80% of the effects			
34		The FMEA must pass the following evaluations: The FMEA lists all process steps			
35		The FMEA lists failure modes for all process steps			
36		Each failure mode has rankings for severity, occurrence, detection, and a calculated RPN			
37		The highest RPN's have recommended actions,			

		responsible persons, and target dates			
38	Perform basic statistical analysis of the current state process using any combination of: - Descriptive statistics - Histogram - Box plot - Run chart - Scatter diagram - Measurement system analysis - Process capability	The descriptive statistics must pass the following evaluations: Does the descriptive statistic illustrate the current state of the primary metric relative to the problem as defined the in Define phase?			
Phase: Analyze					
Row #	Requirement	Evaluation Criteria	Evaluation (Check Whichever Applies)		
			Pass	Fail	Notes
39	Understand the relationship between project inputs and outputs by using any combination of: Correlation using correlation coefficient	The relationship analysis must pass the following evaluations: Does the analysis show a strong, moderate, weak, or no correlation?			
40	- Regression using the appropriate model - Design of experiments - Hypothesis testing - T-tests	Did the student accurately interpret the correlation? (i.e., the analysis shows strong positive correlation and the student indicated as such.)			
41	Identify the future state by creating a detailed future state process map <u>OR</u> future state value stream map	The future state process map must pass the following evaluations: Does the map document each step in the process?			
42		Does the map document each meaningful decision point in the process?			

43		Does the map document any parallel activities?			
44		Does the map include who is responsible for each step in the process, including decision points?			
45		The future state value stream map must pass the following evaluations: Does the map document each step in the process?			
46		Does the map document the flow of information in the process?			
47		Does the map document the value added and non-value added time in a time ladder?			
48		Is the appropriate data recorded for each process step?			
59		Is inventory, WIP, supermarkets, etc. mapped?			

Phase: Improve

Row #	Requirement	Evaluation Criteria	Evaluation (Check Whichever Applies)		
			Pass	Fail	Notes
50	Create a work breakdown structure (tree diagram) or Gantt chart	The work breakdown structure or Gantt chart must pass the following evaluations: Are all the improve activities identified and assigned?			

Phase: Control

Row	Requirement	Evaluation Criteria	Evaluation (Check Whichever Applies)		
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#			Pass	Fail	Notes
51	Develop a control plan for monitoring/controlling the new process including the following: • Training required • Documentation • Monitoring • Response	The control plan must pass the following evaluations: • Does the control plan include any training requirements?			
52		• Does the control plan include any documentation requirements?			
53		• Does the control plan include any monitoring requirements?			
54		• Does the control plan include any response requirements?			
55	Monitor the new process using an appropriate control chart such as: • C Chart • U Chart • NP Chart • P Chart • I-MR Chart • $\bar{X}$-R Chart • $\bar{X}$-S Chart	The control plan must pass the following evaluations: • Does the control chart monitor a metric that is related to and appropriate for the primary metric as defined in the define phase?			
56		• Is the sample size calculation suitable (if applicable)?			
57		• Is the control chart appropriate for the type of data being charted (variable or attribute)?			