

# AVAILABLE COURSE OVERVIEW



## LEAN SIX SIGMA GREEN BELT

Through self-paced online coursework, learn to apply Lean Six Sigma to stabilize processes, decrease variation, solve problems, increase customer value and generate measured business results.

Participants will use the DMAIC method combined with Lean thinking and principles to select the projects based on process sigma level, set achievable goals, use reliable sample data, achieve target sigma levels and avoid unnecessary risk.

## LEARNING OBJECTIVES

- Articulate and apply lean and six sigma concepts and tools
- Utilize the DMAIC method to understand current process performance, discover problems, implement solutions to stabilize and reduce variation, and sustain improvements by controlling entropy.
- Identify processes operating at a sub-par level, gain the support, approval and resources you'll need to analyze the data and implement lasting solutions.
- Lead projects that require an intermediate level of analytical rigor
- Connect project results with corporate financial performance

## CERTIFICATION REQUIREMENTS

- Completion of all required online content and workbook exercises [or classroom alternative]
- 80% or better score on the Green Belt Exam
- Successful completion of Lean Six Sigma project
- We offer a blended instructor-led Certification Course, which will include bi-weekly virtual group coaching sessions, individual one-on-one coaching and DMAIC improvement project work.



# LEAN SIX SIGMA GREEN BELT

## Format:

- Blended: Online + ROI Project Work + Virtual Group Coaching

## Duration:

- 12 hours of online modules + 7 one hour virtual coaching sessions
- 19 hours total

## Languages:

- English & French

## Supplemental Material:

- E-book of People: A leader's day-to-day guide to building, managing and sustaining Lean organizations
- Numerous Lean & Six Sigma tools and templates

## Certification:

- Issued upon completion of all online course work
- 19 Continuing Education Units / 1.9 Learning Units
- Available for print or download. Digital Credly badges can be added to social media profiles and/or email signatures.



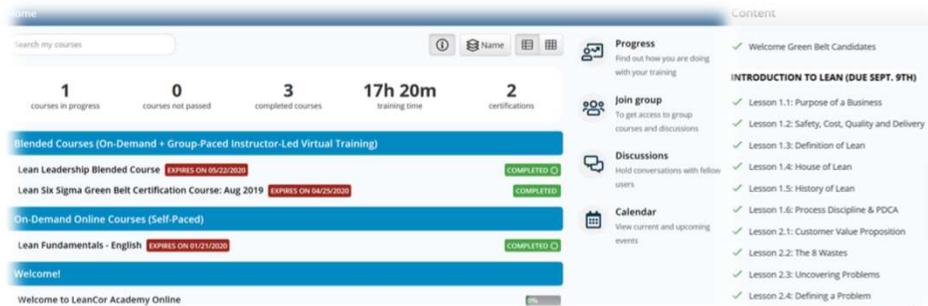
# LEAN SIX SIGMA GREEN BELT MODULE AGENDA



<b>Welcome, Project Overview and Lean/Six Sigma Fundamentals</b>
<b>INTRODUCTION TO LEAN</b>
Purpose and History (6 parts)
Waste and Value (5 parts)
Lean Principles (9 parts)
<b>INTRODUCTION TO SIX SIGMA</b>
Operational Excellence
Six Sigma Defined
Competitive Advantage of Quality
DMAIC Methodology
Project Selection
<b>DMAIC DEFINE Phase</b>
Intro to DMAIC
Project Charter A3
Problem Statement
Project Scoping Using a SIPOC
Baseline Process Performance
Measures of Dispersion & Graphical Analysis
SMART Goal Statement
<b>DMAIC MEASURE Phase</b>
Measure Phase Overview
Process Thinking
Process Mapping
Fishbone Diagram

<b>DMAIC ANALYZE Phase</b>
Analyze Overview
5 Why Analysis
Data Collection Plan
Root Cause Validation
<b>DMAIC IMPROVE AND CONTROL Phases</b>
Improve & Control Overview
Prioritizing Improvements
Mitigating Improvement Risks
Future State Mapping and Piloting
Control Methods
Managing Improvements & Monitoring Results
<b>Lean Management Systems &amp; Tools</b>
Intro to Lean Management Systems
Stability
Standardization
Visual Management & 5S
Quality at the Source
Just in Time
Design for Flow
Leader Standard Work
<b>Certification Exam</b>
30 Questions to be completed in 2 hours

# BLENDED LEAN SIX SIGMA COURSE DESIGN



## ■ Bi-weekly Time Commitment:

- Online Modules = 2 hours
- Bi-Weekly Lectures = 1 hour
- Project Time = Variable

DATE	ACTIVITY	TOPIC
FEB 10	Virtual Coaching Session 1	Course Kickoff Homework: Completion of <i>Lean Six Sigma Intro</i> modules
FEB 24	Virtual Coaching Session 2	Review of <i>Lean and Six Sigma Intro</i> Homework: Completion of DMAIC <i>Define</i> modules
MAR 9	Virtual Coaching Session 3	Review of <i>Define</i> Homework: Completion of DMAIC <i>Measure</i> modules
MAR 24*	Virtual Coaching Session 4	Review of <i>Measure</i> Homework: Completion of DMAIC <i>Analyze</i> modules
APR 6	Virtual Coaching Session 5	Review of <i>Analyze</i> Homework: Completion of DMAIC <i>Improve and Control</i> modules
APR 20	Virtual Coaching Session 6	Review of <i>Improve and Control</i> Homework: Completion of <i>Lean Management Systems</i> modules
MAY 4	Virtual Coaching Session 7	Review of <i>Lean Management Systems</i> and Project Completion Expectations
TBD	Virtual Coaching Session 8	Scheduled 1-on-1 Session with LeanCor Coach

# CLASSROOM GREEN BELT DELIVERY – THREE-DAY FORMAT

- Used as a replacement for the online training experience and virtual learning
- Involves a three-day, comprehensive agenda
- Blends lecture, simulation and exercises

Day 1		
Topic	Start	End
Welcome and Review of the Agenda / Course Goals	8:30	9:00
Lean Review Team Exercise ( <i>Process Thinking, Waste, River of Waste</i> )	9:00	10:00
<i>Break</i>	10:00	10:15
Customer Value and Stability	10:15	10:45
DMAIC Problem Solving Methodology and the Project A3	10:45	11:15
Defining the Problem - Project Group Activity	11:15	12:00
<i>Lunch</i>	12:00	12:45
Project Scope: High-Level Process Mapping - SIPOC	12:45	14:45
<i>Break</i>	14:45	15:00
Baseline Data Collection: Descriptive Stats (Graphs) and Pareto Analysis	15:00	15:45
The SMART Goal Statement	15:45	16:15
End of Day Review	16:15	16:30



**TRANSPLACE**

# ONE-ON-ONE COACHING TO ENABLE PROJECT COMPLETION

*Green Belt instructors participate in one to three project coaching calls to deeply understand the project and remove roadblocks through using the tools and methodology for solving a real business problem.*



Lean Six Sigma Deliverable	Criteria	Complete (Y/N)	Specific Comments	Action Items
<b>DEFINE</b>				
Problem Statement	<ul style="list-style-type: none"> <li>Problem statement is clear and tangible</li> <li>Problem impacts the business</li> <li>Doesn't contain solution or root cause</li> </ul>	Y	The last sentence is more of a "goal" statement, so not necessary at this point.	
Scope (SIPOC)	<ul style="list-style-type: none"> <li>Observed problem area identified with stakeholders using SIPOC</li> <li>Properly scoped (bookends, not too detailed)</li> </ul>	N	Multiple suppliers listed in the same cell.	Split out the different "suppliers" referenced into their own cells for simplicity. Please split out the customers as well.
Baseline Process Performance	<ul style="list-style-type: none"> <li>Documented performance trends with data/graphs</li> <li>Measures of dispersion, defects, sigma ratio or Ppk</li> </ul>	N	Great data put together	Please add a text box under the Pareto to divulge the "so-what" takeaways from the data.
SMART Goal Statement	<ul style="list-style-type: none"> <li>Specific, Measurable, Attainable, Relevant, Time-bound opportunity</li> <li>Defines success for the project</li> </ul>	N	It is good that you are trying to address all of the core elements of SMART, but you don't have to split these into separate statements. Ideally, you would have a singular goal statement that meets all five.	The Relevance statement isn't adding value here in its current form, calling out errors lead to rework is sufficient. The Goal isn't currently time-bound. When specifically are you hoping to see improvements?
<b>MEASURE / ANALYZE</b>				
Current State Process Map	<ul style="list-style-type: none"> <li>Someone else "goes" or inquiry with customer, or process owner</li> <li>All core process steps (hidden factors)</li> </ul>	Y	Nice job mapping. Good detail and consideration of the complete process.	Just make sure that in presentation/customer form that all words are visible in the shape box.
Cause and Effect "Fishbone" Diagram	<ul style="list-style-type: none"> <li>Someone else "goes" or inquiry with customer, or process owner</li> <li>Properly completed</li> <li>Accepted major causes highlighted</li> </ul>	Y	Good. Clearly you all spent lots of effort getting this right.	Another nice to have is highlighting the main contributing factors that you plan on doing 5 Why's with.
5 Why Analysis	<ul style="list-style-type: none"> <li>Logical flow and readable structure</li> <li>Clear root cause</li> </ul>	N	<p>The first "Why" listed isn't really adding value here. I have added Paths to the right for reference.</p> <p>Path 1: This one doesn't flow well to me. I feel like there is a step skipped or wording problem to get from the design not being uploaded to the next step</p> <p>Path 2: Some good stuff here. I think the third branch is less valuable as it is reactive in nature built on team members seeing mistakes that are made.</p> <p>What might be more interesting is basing this one on the "manually entering the days" part.</p> <p>Path 3: Seems like a good opportunity for a branch around why TMs copy other schedules</p> <p>Path 4: Is this around true holidays or just N/A weeks?</p> <p>Root Causes: 1 and 2 seem workable, 3 does not seem very valid. Is there a non-technical, process side to this? Worth thinking about.</p>	Please build off of the good work done with the considerations made to the left.
Data Collection Plan and Root Cause Validation	<ul style="list-style-type: none"> <li>Data collection plan (current or future data)</li> <li>Involvement of data collector</li> <li>Description and results of observable experiment</li> </ul>	N	Data collection plan looks good and strong. Still leave some of the root causes unvalidated, particularly around training and process. Think about how you want to validate those causes.	Can you run an experiment with the training and process changes and compare a sample of data with your original time study?
<b>IMPROVE / CONTROL</b>				
Prioritization (XY) Matrix	<ul style="list-style-type: none"> <li>XY Matrix built with customer variable that are important for project success</li> <li>Understood priority</li> </ul>	Y	Good use of the tool. Is there any solution option that reduces the touchpoints/calculations/decisions without it being automated? How tight and visible are the business rules?	
FMEA	<ul style="list-style-type: none"> <li>Correctly done</li> <li>Actions work into improvement plan</li> </ul>	Y	The actions listed don't have owners or dates. Did they make it into your actual improvement plan?	
Future State Process Map	<ul style="list-style-type: none"> <li>Document complete, showing a process with less waste</li> <li>Highlight what improved (by how much)</li> </ul>	Y		
Improvement Plan, Controls & Measurables	<ul style="list-style-type: none"> <li>Improvement plan includes items that address root cause</li> <li>Controls identified to sustain improvements</li> <li>Lean management tools are present</li> <li>Process for measuring results identified and tracked</li> </ul>	N		Don't see controls. Don't see integration of FMEA actions.
Share Lessons Learned - Complete A3	<ul style="list-style-type: none"> <li>All talk the story of the problem solving or project</li> <li>Reflection notes for next problem solving activity</li> </ul>	N		How can you share with other teams at LeanCor?
<b>NOTES</b>				
<p>You all have done some great work and I am continuing to challenge you not to throw your hands up with technology and training (although those are both valid factors). You get the tools and the methods, I just want to see them tightened up and want to see you land on solutions that will improve your situation. Remember, training is only as good as the consistency of the process and the quality of the decisions. If those are ever loose or changing, the variation can creep in.</p>				

# DMAIC A3 TEMPLATE AND TOOLS PROVIDED TO STUDENTS

Lean Six Sigma: DMAIC A3	Project Name:	New Team Member Readiness	Project Leader:	Clint	Project Team:	Clint, Mark, Ryan, Steve, Leeanna, Kelley	Project #:	4	
	Process Name:	Team Member Onboarding	Champion:	Ben		Start Date:	11/15/2016	Close Date:	2/1/2018
			Process Owner:	Sharon		Lead Coach:	Ana	A3 Last Update:	1/4/2019

<b>DEFINE</b>		<b>MEASURE and ANALYZE</b>		<b>IMPROVE and CONTROL</b>																																														
<b>BOX 1: Problem Statement</b>		<b>BOX 5: Current State Process Map</b>		<b>BOX 9: Prioritization (XY) Matrix</b>																																														
<p>From January 2015 through October 2016, the average amount of time that it takes for a new team member to hit standard productivity (based on supervisor evaluation) is eight weeks. This lead time is twice as long as our goal of four weeks and is costing the organization approximately \$1,000 per week per team member for every week that they are not producing. This is the opportunity.</p>		<p>Variation in planning process and actual work based shadowing. Causation still unclear.</p>		<table border="1"> <thead> <tr> <th>Measurement Area</th> <th>1 - 100% of 2016</th> <th>2 - 75% of 2016</th> <th>3 - 50% of 2016</th> <th>4 - 25% of 2016</th> <th>5 - 0% of 2016</th> <th>6 - 0% of 2016</th> <th>7 - 0% of 2016</th> <th>8 - 0% of 2016</th> <th>9 - 0% of 2016</th> <th>10 - 0% of 2016</th> </tr> </thead> <tbody> <tr> <td>Standard work creation</td> <td>5</td> </tr> <tr> <td>Accountability established</td> <td>5</td> </tr> <tr> <td>Proactive collaboration</td> <td>5</td> </tr> </tbody> </table>		Measurement Area	1 - 100% of 2016	2 - 75% of 2016	3 - 50% of 2016	4 - 25% of 2016	5 - 0% of 2016	6 - 0% of 2016	7 - 0% of 2016	8 - 0% of 2016	9 - 0% of 2016	10 - 0% of 2016	Standard work creation	5	5	5	5	5	5	5	5	5	5	Accountability established	5	5	5	5	5	5	5	5	5	5	Proactive collaboration	5	5	5	5	5	5	5	5	5	5	
Measurement Area	1 - 100% of 2016	2 - 75% of 2016	3 - 50% of 2016	4 - 25% of 2016	5 - 0% of 2016	6 - 0% of 2016	7 - 0% of 2016	8 - 0% of 2016	9 - 0% of 2016	10 - 0% of 2016																																								
Standard work creation	5	5	5	5	5	5	5	5	5	5																																								
Accountability established	5	5	5	5	5	5	5	5	5	5																																								
Proactive collaboration	5	5	5	5	5	5	5	5	5	5																																								
<b>BOX 2: Scope (SIPOC)</b>		<b>BOX 6: Cause and Effect "Fishbone" Diagram</b>		<b>BOX 10: FMEA</b>																																														
<table border="1"> <thead> <tr> <th>Suppliers</th> <th>Inputs</th> <th>Process</th> <th>Outputs</th> <th>Customers</th> </tr> </thead> <tbody> <tr> <td>HR</td> <td>Recruitment, Interviewing, Hiring</td> <td>Onboarding</td> <td>New Team Member</td> <td>Operations</td> </tr> <tr> <td>Training</td> <td>Standard Work, Training Materials</td> <td>Shadowing</td> <td>Knowledge</td> <td>Operations</td> </tr> <tr> <td>Operations</td> <td>Team Member</td> <td>Production</td> <td>Product</td> <td>Customer</td> </tr> </tbody> </table>		Suppliers	Inputs	Process	Outputs	Customers	HR	Recruitment, Interviewing, Hiring	Onboarding	New Team Member	Operations	Training	Standard Work, Training Materials	Shadowing	Knowledge	Operations	Operations	Team Member	Production	Product	Customer	<p><b>Effect:</b> The lead time for Specialists and Analysts is too long from hire to signoff from leadership.</p> <p><b>Materials:</b> Job shadowing plans are not critical. Training standards for different customers/products don't exist. Out of date 50%.</p> <p><b>Methods:</b> Traditional job shadowing is not effective for teaching standardized work tasks. Skills gaps are not built into the training process. Problem solving and issues handling are not given enough training time. Learning by doing scenarios capture all scenarios needed for readiness.</p> <p><b>Measurement System:</b> No measurement system in place to evaluate progress. From level evaluation of readiness not measured or standardized.</p> <p><b>Other Factors/Management:</b> Different team members have different learning styles. Customer crises can't be planned for ahead of time.</p> <p><b>Resources:</b> Job shadowing trainers are not trained as trainers. Trainers must also complete standard work, so attention is compromised.</p>		<p><b>Root causes for scenario-based learning issues:</b></p> <ul style="list-style-type: none"> <li>No alignment between operations and IT to properly address customization needs</li> <li>Team members don't have the skills to build strong processes outside of tools</li> <li>No learning, reflection and documentation from rare/one-off scenarios</li> </ul> <p>Additional root cause testing using experimentation and data collection for team leads, shadowing plans and hours spent in training.</p>																										
Suppliers	Inputs	Process	Outputs	Customers																																														
HR	Recruitment, Interviewing, Hiring	Onboarding	New Team Member	Operations																																														
Training	Standard Work, Training Materials	Shadowing	Knowledge	Operations																																														
Operations	Team Member	Production	Product	Customer																																														
<b>BOX 3: Baseline Process Performance</b>		<b>BOX 7: 5 Why Analysis</b>		<b>BOX 11: Future State Process Map</b>																																														
<p>Process begins at new team member being hired and ends at the acceptable performance review. Hiring process and performance review process are out-of-scope.</p>				<p>Major process changes for the future state revolve around the proactive scheduling and communication for new TM onboarding time and shadowing and the addition of knowledge checks at various stages in the process.</p>																																														
<p><b># of New Hires in '15 and '16</b></p>		<b>BOX 8: Data Collection Plan and Root Cause Validation</b>		<b>BOX 12: Improvement Plan</b>																																														
<p>Average lead time across all new team members during period was 8.2 weeks with a standard deviation of 2.1 weeks. Pareto demonstrates that Specialists and Analysts make up almost 80% of new team members.</p>		<table border="1"> <thead> <tr> <th>Y1</th> <th>Y2</th> <th>Y3</th> <th>Y4</th> <th>Y5</th> </tr> </thead> <tbody> <tr> <td>Specialists</td> <td>45</td> <td>40</td> <td>35</td> <td>30</td> </tr> <tr> <td>Analysts</td> <td>30</td> <td>25</td> <td>20</td> <td>15</td> </tr> <tr> <td>Engineers</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> </tr> <tr> <td>Developers</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> </tr> </tbody> </table>		Y1	Y2	Y3	Y4	Y5	Specialists	45	40	35	30	Analysts	30	25	20	15	Engineers	10	10	10	10	Developers	5	5	5	5	<table border="1"> <thead> <tr> <th>Action Item</th> <th>Owner</th> <th>Due Date</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>1. Create new TM schedule template</td> <td>Clint</td> <td>Jan. 21</td> <td></td> </tr> <tr> <td>2. Institute scenario document and standup</td> <td>Ben</td> <td>Jan. 21</td> <td></td> </tr> <tr> <td>3. Build knowledge checks and test</td> <td>Clint</td> <td>Feb. 1</td> <td></td> </tr> <tr> <td>4. Scope out training for TMs and "coaches"</td> <td>Ana</td> <td>Mar. 1</td> <td></td> </tr> </tbody> </table>		Action Item	Owner	Due Date	Status	1. Create new TM schedule template	Clint	Jan. 21		2. Institute scenario document and standup	Ben	Jan. 21		3. Build knowledge checks and test	Clint	Feb. 1		4. Scope out training for TMs and "coaches"	Ana	Mar. 1	
Y1	Y2	Y3	Y4	Y5																																														
Specialists	45	40	35	30																																														
Analysts	30	25	20	15																																														
Engineers	10	10	10	10																																														
Developers	5	5	5	5																																														
Action Item	Owner	Due Date	Status																																															
1. Create new TM schedule template	Clint	Jan. 21																																																
2. Institute scenario document and standup	Ben	Jan. 21																																																
3. Build knowledge checks and test	Clint	Feb. 1																																																
4. Scope out training for TMs and "coaches"	Ana	Mar. 1																																																
<b>BOX 4: SMART Goal Statement</b>		<b>BOX 13: Controls</b>		<b>BOX 14: Measured Results</b>																																														
<p>Based on the SIPOC and the baseline performance, the goal will be centered around Specialists and Analysts. Our goal with this project is to reduce the new team member lead time for productivity for specialists and analysts to 5 weeks with a standard deviation of 1 week by the end of 2018.</p>		<p>1. Standard work creation for scheduling, quiz audits</p> <p>2. PDCA instituted to review training material and shadowing</p>		<table border="1"> <thead> <tr> <th>Measurable Results</th> <th>Target</th> <th>30 days</th> <th>60 days</th> <th>90 days</th> </tr> </thead> <tbody> <tr> <td>Lead time for productivity</td> <td>5 weeks</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Standard deviation for readiness</td> <td>1 week</td> <td></td> <td></td> <td></td> </tr> <tr> <td>First pass rate (knowledge checks)</td> <td>80%</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Measurable Results	Target	30 days	60 days	90 days	Lead time for productivity	5 weeks				Standard deviation for readiness	1 week				First pass rate (knowledge checks)	80%																												
Measurable Results	Target	30 days	60 days	90 days																																														
Lead time for productivity	5 weeks																																																	
Standard deviation for readiness	1 week																																																	
First pass rate (knowledge checks)	80%																																																	
<b>BOX 15: Lessons Learned</b>		<p>1) Communication within the team and with others is crucial to success in making progress with the project</p> <p>2) Process mapping is very helpful</p> <p>3) Verification with data and interviewing lead to dispelling some causes that we initially thought</p>																																																

Students will use this framework to complete and present their project work from defining the problem to making and sustaining improvements.

# LEAN SIX SIGMA TRAINING

## Lean Six Sigma Green Belt

**Format:**

- Pre-Req: completion of Lean Thinker and Lean Problem Solver
- Green Belt Program (8 weeks + Project)
  - Flipped Classroom Model: 12 hours of online content (1-2 hours per week) + 8 hours of group reflection sessions (1 hour per week)
  - 80% or above score on Green Belt exam
  - Completion of process-level DMAIC project

**Audience:**

- Advanced front line team members

**Description:**

The Lean Six Sigma Green Belt program is an investment program for team members who have a desire to help solve problems within their work teams and functional areas.

## Lean Six Sigma Black Belt

**Format:**

- Pre-Req: completion of Green Belt
- Black Belt Program (2 weeks + Project)
  - Instructor-Led Virtual: 2 weeks (4 hours/day)
  - 80% or above score on Black Belt exam
  - Completion of value-stream level DMAIC project (6 – 12 months)

**Audience:**

- Continuous Improvement and Transformation Leaders

**Description:**

The Lean Six Sigma Black Belt program is an investment program for leaders who have a desire to lead strategic business improvements using change management, advanced analytical skills, and project management

