Lean Six Sigma Green Belt
100% Online / On Demand
80 hours or 8.0 CEUs
Cost ~~$2,495~~ [$1,250 from July 2023 with Scholarship – until scholarship funds are used]

You have four months to complete this class from the start date. You may also complete the class faster than 4 months. You will access modules and instructor narrated slides by way of D2L though PTC's portal. These are available 24 hours a day and 7 days a week. You will proceed at your own pace. There are 94 exercises that must be submitted to the instructor for feedback. The instructor is available by email/phone to answer questions.

In order to receive a Lean Six Sigma Green Belt certificate, you must complete all the exercises and score 80 or better on the Final Exam. You may also receive a second certificate for submitting a project (optional) and it being approved. There is no time limit for the project submittal.

After you have successfully completed the class the instructor is still available to review data, analysis and answer questions. We do not disappear when the class or project ends. Sams.c@ptc.edu to enroll.

1. Collect Paperwork before the start of class

2. <u>First Notebook</u> Modules 1 – 4
   1. Introduction to Lean Six Sigma
   2. Introduction to Define
   3. Project Charter
      a. Review elements
      b. Develop Project Charter for Card Drop
         i. Lean Project Charter
         ii. Six Sigma Project Charter

3. Modules 5 - 7
   1. Module 5 – Project Change Management
   2. Module 6 – Voice of the Customer
      a. McDonald's example
      b. Obtain VOC for the Card Drop
   3. Module 7 – Intro to Measure
      a. Review and answer questions

4. Modules 8 & 9
   1. Module 8 – Key Lean Concepts
      a. C. Tim Woods and Card Drop
      b. Littles Law and Card Drop
         i. Exit Rate is ALWAYS a Fraction
      c. PVE and Card Drop
   2. Module 9 – Document & Analyze

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    a. Review Process Maps
    b. VSM detail discussion and Card Drop
    c. Swim Lane Hybrid
    d. PLT & PVE for Card Drop

5. **Modules 10 & 11**

    1. Module 10 – Cause & Effect Matrix
        a. Calculations
    2. Module 11 – Minitab Overview
        a. Tool Bar Use
        b. Copying from Minitab
        c. Stacking Data
        d. HELP!

6. **Modules 12 & 13**

    1. Module 12 – Basic Statistics
        a. Central Tendency
        b. Variation, Dispersion & Spread
        c. Types of Data
            i. Exercise – slide -32
        d. Normal Distribution
        e. Normality
            i. Graphical Summary
            ii. Probability Plot
            iii. Normality Test
        f. Box Plot
        g. Scatter Plot
        h. Cookie Data
    2. Module 13 – Data Collection
        a. Data Collection Plan
            i. Stratification factors & Card Drop
        b. Sampling Strategy
            i. Population
            ii. Subset (Sample)

7. **Modules 14 & 15**

    1. Module 14 – Control Charts
        a. Common & Special Cause
        b. Types of Control Charts
            i. Rational Subgroup
            ii. How to set up the first time
        c. Batch Process Time
        d. Weight

e. Improved Weight
f. XBar R
2. Module 15 – Measurement System Analysis
   a. Gage R&R Crossed
   b. Discuss Measurement System in Card Drop

8. Module 16

   1. Module 16 – Process Capability
      a. Compressor Shaft
         i. Six Pack
      b. Capability Width
      c. Individual Identification Distribution in Minitab

9. Notify Instructor of completion of materials

10. *FIRST WEEK EXAM*

11. Second Notebook   Modules 1 - 4
    1. Module 1 - Review
    2. Module 2 – Introduction to Analyze
    3. Module 3 – Root Cause Identification and Validation
       a. Card Drop Root Causes and Validation
          i. Lean
          ii. Six Sigma
    4. Module 4 - FMEA
       a. Cause & Effect Matrix to populate the FMEA
       b. New FMEA structure

12. Modules 5 & 6
    1. Module 5 – Hypothesis Testing
       a. Before and After Card Drop
       b. Risks
          i. Alpha
          ii. Beta
          iii. Power and Sample Size
    2. Module 6 – Means and Variance Tests
       a. Division A Time
       b. Division A vs. B
       c. Power and Sample Size
       d. Review Components of Sample Size
       e. Call Center Day vs. Evening
       f. Division ABCD
       g. Machine Diameters

13. **Modules 7 - 9**
    1. Module 7 – Simple Linear Regression
    2. Module 8 – Introduction to Improve
    3. Module 9 – Solution Development
        a. Card Drop Exercise

14. **Modules 10, 11 and 16**
    1. Module 10 – Quick Improvement – Quick Wins & Kaizen Events
    2. Module 11 – Quick Improvement – Process Flow Improvement
        a. Takt Time
        b. Takt Time Exercise
        c. Non-Value Add Analysis
        d. Discuss Process Balancing
        e. Discuss Batch Size
        f. Relationship between Changeover Reduction and Batch Size
    3. Module 16 – Quick Improvement – 5S
        a. Format – how to

15. **Modules 12, 15, 17 & 18** (skip modules 13 and 14)
    1. Module 12 – Introduction to DOE
        a. Terminology
        b. Resolution
        c. Factorial Notation
        d. Fractional Factorial Notation
    2. Module 15 – Implementation
        a. AHP and Pugh Matrix
        b. Develop solutions for Card Drop
        c. Pilot Exercise
        d. Pilot – "After Data" Comparisons
    3. Module 17 – Introduction to Control
    4. Module 18 – Mistake Proofing
        a. Discuss two types
        b. Card Drop Exercise, Consider Mistake Proofing Opportunities

16. **Modules 19** – Process Control Methods

17. **Notify Instructor of completion of materials**

18. *FINAL EXAM*