



# Lean6Sigma Academy

A DIVISION OF CANSULT, INC.



## Lean Six Sigma Black Belt

Course Number: 06

Online Course Syllabus





## Module Description

**Course Number:** 06

**Module Name:**

Lean Six Sigma Black Belt – The Role of the Black Belt


**About this Course:** This globally accredited Lean Six Sigma Black Belt course focuses on a modern approach to creating a high level of competency in the Black Belt supporting organizations with Lean Six Sigma efforts and in realizing significant ROI. This practical approach is not focused on a specific statistical software (such as MiniTab). Rather, it provides flexible and detailed instruction on why, when and how to use advanced analytical and problem-solving tools using Excel. This course includes a robust blend of advanced technical skills as well as the soft skills required to provide highly valuable support to leaders, Yellow Belts, Green Belts and to successfully lead Black Belt projects.

**Pre-Requisite Courses**

Lean Six Sigma Green Belt

**Key: Section Includes**

 Excel Template

 One-Point Lesson

## Module Topics

**Module Description:** This module provides an overview and sets expectations for this course and for the role of the Lean Six Sigma Black Belt.

**The Role of the Black Belt**

- Lean Six Sigma Belt Levels and Expected Returns
- Black Belt Role Description; Different ways to contribute
- Black Belt Project ROI and Value to an Organization
- Black Belt Analytical Tools use basic Excel (no specialized software application required)
- Your Black Belt Project
- The Role of the Yellow Belt
- The Role of the Green Belt
- The Role of the Blue Belt (Sponsor)
- The Role of the Purple Belt
- The Role of the Black Belt



## Course Time & PDUs



**Total Instructional Video: 36 Hours**

**Instructional Video Hours per Module:**

<b>Role of the BB</b>	<b>1</b>
Support Leaders	3
Support Yellow Belts	4
Advanced Define	3
Advanced Measure	6
Advanced Analyze	7
Advanced Improve	4
Advanced Control	3
RIE Facilitator Guide	5



**Estimated Engaged Time (Including Workbook Practice): 50 hours**

**TOTAL Black Belt Course Hours/PDUs (Including application) = 108 Hours**





## Module Description

**Course Number:** 06

**Module Name:**

Lean Six Sigma Black Belt – Supporting Leaders

**About this Course:** This globally accredited Lean Six Sigma Black Belt course focuses on a modern approach to creating a high level of competency in the Black Belt supporting organizations with Lean Six Sigma efforts and in realizing significant ROI. This practical approach is not focused on a specific statistical software (such as MiniTab). Rather, it provides flexible and detailed instruction on why, when and how to use advanced analytical and problem-solving tools using Excel. This course includes a robust blend of advanced technical skills as well as the soft skills required to provide highly valuable support to leaders, Yellow Belts, Green Belts and to successfully lead Black Belt projects.

**Pre-Requisite Courses**

Lean Six Sigma Green Belt

Key: Section Includes















 Excel Template

 One-Point Lesson

## Module Topics

**Module Description:** This module provides specific instruction on how to effectively support Leaders in the organization as they move through the Leadership Cycle

### Supporting Leaders (and the Leadership Cycle)

- Typical Challenges
- The Leadership Cycle  
  - Gap/Opportunity Analysis  
  - Project Selection  
  - Project Kickoff  
  - Project Approaches
  - Project Roles
  - Team Selection  
  - Determining Level of Black Belt Support
  - Portfolio Review
    - Roles
    - Portfolio Tracker  
- **Assessment: Leadership Cycle** 
- **Assessment: Managing the Project Portfolio** 

## Course Time & PDUs



**Total Instructional Video: 36 Hours**

**Instructional Video Hours per Module:**

Role of the BB	1
<b>Support Leaders</b>	<b>3</b>
Support Yellow Belts	4
Advanced Define	3
Advanced Measure	6
Advanced Analyze	7
Advanced Improve	4
Advanced Control	3
RIE Facilitator Guide	5



**Estimated Engaged Time (Including Workbook Practice):**  
50 hours

**TOTAL Black Belt Course Hours/PDUs (Including application) = 108 Hours**



## Module Description

**Course Number:** 06

**Module Name:**

Lean Six Sigma Black Belt – Supporting the YB

**About this Course:** This globally accredited Lean Six Sigma Black Belt course focuses on a modern approach to creating a high level of competency in the Black Belt supporting organizations with Lean Six Sigma efforts and in realizing significant ROI. This practical approach is not focused on a specific statistical software (such as MiniTab). Rather, it provides flexible and detailed instruction on why, when and how to use advanced analytical and problem-solving tools using Excel. This course includes a robust blend of advanced technical skills as well as the soft skills required to provide highly valuable support to leaders, Yellow Belts, Green Belts and to successfully lead Black Belt projects.

**Pre-Requisite Courses**

Lean Six Sigma Green Belt

**Key: Section Includes**







 Excel Template

 One-Point Lesson

## Module Topics

**Module Description:** This module provides specific instruction on how to effectively support Yellow Belts in the organization who are utilizing the PDCA toolkit for Daily Problem Solving.

**Supporting the Yellow Belt (in Daily Problem-Solving)**

- What is Primary Problem-Solving?
- Role of the Black Belt; increase impact/ROI
- Supporting the Yellow Belt through Plan-Do-Check-Act (PDCA) 
  - Plan 
  - Do 
  - Check 
  - Act 
- **Assessment: PDCA** 

## Course Time & PDUs



**Total Instructional Video: 36 Hours**

**Instructional Video Hours per Module:**

Role of the BB	1
Support Leaders	3
<b>Support Yellow Belts 4</b>	
Advanced Define	3
Advanced Measure	6
Advanced Analyze	7
Advanced Improve	4
Advanced Control	3
RIE Facilitator Guide	5



**Estimated Engaged Time (Including Workbook Practice): 50 hours**

**TOTAL Black Belt Course Hours/PDUs (Including application) = 108 Hours**





## Module Description

**Course Number:** 06

**Module Name:**

Lean Six Sigma Black Belt – Advanced Define Phase

**About this Course:** This globally accredited Lean Six Sigma Black Belt course focuses on a modern approach to creating a high level of competency in the Black Belt supporting organizations with Lean Six Sigma efforts and in realizing significant ROI. This practical approach is not focused on a specific statistical software (such as MiniTab). Rather, it provides flexible and detailed instruction on why, when and how to use advanced analytical and problem-solving tools using Excel. This course includes a robust blend of advanced technical skills as well as the soft skills required to provide highly valuable support to leaders, Yellow Belts, Green Belts and to successfully lead Black Belt projects.

**Pre-Requisite Courses**

Lean Six Sigma Green Belt

**Key: Section Includes**


 Excel Template

 One-Point Lesson

## Module Topics

**Module Description:** This module provides specific instruction on how to lead the Define phase of a Black Belt project or to provide support and direction to Green Belts (root cause analysis project leads and teams) in the Define phase of a DMAIC project and to lead the Define phase of a Black Belt project.

**Advanced Define Phase**

- Access to Lean Six Sigma Green Belt Training
- Black Belt level of Support for Green Belts 
- Project Storyboard Template 
- **Assessment: Improvement Projects** 
- Closing the Define Phase

## Course Time & PDUs



**Total Instructional Video: 36 Hours**

**Instructional Video Hours per Module:**

Role of the BB	1
Support Leaders	3
Support Yellow Belts	4
<b>Advanced Define</b>	<b>3</b>
Advanced Measure	6
Advanced Analyze	7
Advanced Improve	4
Advanced Control	3
RIE Facilitator Guide	5



**Estimated Engaged Time (Including Workbook Practice):**  
50 hours

**TOTAL Black Belt Course Hours/PDUs (Including application) = 108 Hours**





## Module Description

**Course Number:** 06

**Module Name:**

Lean Six Sigma Black Belt – Advanced Measure Phase

**About this Course:** This globally accredited Lean Six Sigma Black Belt course focuses on a modern approach to creating a high level of competency in the Black Belt supporting organizations with Lean Six Sigma efforts and in realizing significant ROI. This practical approach is not focused on a specific statistical software (such as MiniTab). Rather, it provides flexible and detailed instruction on why, when and how to use advanced analytical and problem-solving tools using Excel. This course includes a robust blend of advanced technical skills as well as the soft skills required to provide highly valuable support to leaders, Yellow Belts, Green Belts and to successfully lead Black Belt projects.

**Pre-Requisite Courses**

Lean Six Sigma Green Belt

**Key: Section Includes**






 Excel Template

 One-Point Lesson

## Module Topics

**Module Description:** This module provides specific instruction on how to lead the Measure phase of a Black Belt project or to provide support and direction to Green Belts (root cause analysis project leads and teams) in the Measure phase of a DMAIC project. Advanced tools and techniques are included, which the Black Belt may perform his/herself or may instruct the team on how and why to use the technique.

**Advanced Measure Phase**

- Determine the Level of Support Needed
- Statistical Power
  - Alpha (Type I) and Beta (Type II) Errors 
  - Power and p-Value
  - Power Analysis
  - Statistical Power & Power Analysis 
- Measurement Systems Analysis 
  - Definitions
  - Gage R&R and Discrete Data Analysis
  - Gage R&R using ANOVA
  - Attribute Gage R&R (Discrete Data)
- Data Normality
  - Histogram
  - Descriptive Statistics
  - Normal Probability (Q-Q) Plot
  - Shapiro-Wilk Test
  - Anderson Darling Test
  - Transforming Data 
- Process Capability Measures 
- Closing the Measure Phase

## Course Time & PDUs



**Total Instructional Video: 36 Hours**

**Instructional Video Hours per Module:**

Role of the BB	1
Support Leaders	3
Support Yellow Belts	4
Advanced Define	3
<b>Advanced Measure</b>	<b>6</b>
Advanced Analyze	7
Advanced Improve	4
Advanced Control	3
RIE Facilitator Guide	5



**Estimated Engaged Time (Including Workbook Practice):**  
50 hours

**TOTAL Black Belt Course Hours/PDUs (Including application) = 108 Hours**



## Module Description

**Course Number:** 06

**Module Name:**

Lean Six Sigma Black Belt – Advanced Analyze Phase


**About this Course:** This globally accredited Lean Six Sigma Black Belt course focuses on a modern approach to creating a high level of competency in the Black Belt supporting organizations with Lean Six Sigma efforts and in realizing significant ROI. This practical approach is not focused on a specific statistical software (such as MiniTab). Rather, it provides flexible and detailed instruction on why, when and how to use advanced analytical and problem-solving tools using Excel. This course includes a robust blend of advanced technical skills as well as the soft skills required to provide highly valuable support to leaders, Yellow Belts, Green Belts and to successfully lead Black Belt projects.

**Pre-Requisite Courses**

Lean Six Sigma Green Belt

**Key: Section Includes**


















 Excel Template

 One-Point Lesson

## Module Topics

**Module Description:** This module provides specific instruction on how to lead the Analyze phase of a Black Belt project or provide support and direction to Green Belts (root cause analysis project leads and teams) in the Analyze phase of a DMAIC project. Advanced tools and techniques are included, which the Black Belt may perform his/herself or may instruct the team on how and why to use the technique.

### Advanced Analyze Phase

- Selecting the Right Hypothesis Test  
- Collect Data & Run the Test
- Hypothesis Tests with Practice Scenarios
  -  • One sample Z-test
  -  • One sample t-test
  -  • Paired t-test
  -  • Wilcoxon Signed Rank Test
  -  • Two sample t-test
  -  • Mann-Whitney test
  -  • Two sample z-test
  -  • One-way ANOVA
  -  • Kruskal-Wallis test
  -  • Two-way ANOVA
  -  • F-test (of Variance)
  -  • Chi Square
  -  • Regression
  -  • Correlation
  -  • Logistic Regression
- Communication in Data Analysis/Data Science
- Closing the Analyze Phase

## Course Time & PDUs



**Total Instructional Video: 36 Hours**

**Instructional Video Hours per Module:**

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Support Leaders	3
Support Yellow Belts	4
Advanced Define	3
Advanced Measure	6
<b>Advanced Analyze</b>	<b>7</b>
Advanced Improve	4
Advanced Control	3
RIE Facilitator Guide	5



**Estimated Engaged Time (Including Workbook Practice): 50 hours**

**TOTAL Black Belt Course Hours/PDUs (Including application) = 108 Hours**





## Module Description

**Course Number:** 06

**Module Name:**

Lean Six Sigma Black Belt – Advanced Improve Phase

**About this Course:** This globally accredited Lean Six Sigma Black Belt course focuses on a modern approach to creating a high level of competency in the Black Belt supporting organizations with Lean Six Sigma efforts and in realizing significant ROI. This practical approach is not focused on a specific statistical software (such as MiniTab). Rather, it provides flexible and detailed instruction on why, when and how to use advanced analytical and problem-solving tools using Excel. This course includes a robust blend of advanced technical skills as well as the soft skills required to provide highly valuable support to leaders, Yellow Belts, Green Belts and to successfully lead Black Belt projects.

**Pre-Requisite Courses**

Lean Six Sigma Green Belt

**Key: Section Includes**










 Excel Template

 One-Point Lesson

## Module Topics

**Module Description:** This module provides specific instruction on how to lead the Improve phase of a Black Belt project or provide support and direction to Green Belts (root cause analysis project leads and teams) in the Improve phase of a DMAIC project. Advanced tools and techniques are included, which the Black Belt may perform his/herself or may instruct the team on how and why to use the technique.

### Advanced Improve Phase

- **Assessment: 5S & Workplace Organization** 
- DMADV (Design, Measure, Analyze, Design, Verify)
- House of Quality  
- TRIZ (Theory of Inventive Problem Solving)  
- Design of Experiments (DOE)  
- Failure Modes and Effects Analysis (FMEA)  

## Course Time & PDUs



**Total Instructional Video: 36 Hours**

**Instructional Video Hours per Module:**

Role of the BB	1
Support Leaders	3
Support Yellow Belts	4
Advanced Define	3
Advanced Measure	6
Advanced Analyze	7
<b>Advanced Improve</b>	<b>4</b>
Advanced Control	3
RIE Facilitator Guide	5



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## Module Description

**Course Number:** 06

**Module Name:**

Lean Six Sigma Black Belt – Advanced Control Phase


**About this Course:** This globally accredited Lean Six Sigma Black Belt course focuses on a modern approach to creating a high level of competency in the Black Belt supporting organizations with Lean Six Sigma efforts and in realizing significant ROI. This practical approach is not focused on a specific statistical software (such as MiniTab). Rather, it provides flexible and detailed instruction on why, when and how to use advanced analytical and problem-solving tools using Excel. This course includes a robust blend of advanced technical skills as well as the soft skills required to provide highly valuable support to leaders, Yellow Belts, Green Belts and to successfully lead Black Belt projects.

**Pre-Requisite Courses**

Lean Six Sigma Green Belt

**Key: Section Includes**

 Excel Template





 One-Point Lesson

## Module Topics






**Module Description:** This module provides specific instruction on how to lead the Control phase of a Black Belt project or provide support and direction to Green Belts (root cause analysis project leads and teams) in the Control phase of a DMAIC project. Advanced tools and techniques are included, which the Black Belt may perform his/herself or may instruct the team on how and why to use the technique.

### Advanced Control Phase

• **Deeper Dive & Practice**

-  • Validate Results
-  • Visual Performance Management
-  • Service Level Agreements
-  • Leader Standard Work

• **Assessments**

-  • Visual Performance Management (Site)
-  • Visual Performance Management (Workstation/Function)
-  • Improvement Projects (Site)
-  • Kaizen/Rapid Improvement Events Management
-  • Team Performance

## Course Time & PDUs



**Total Instructional Video: 36 Hours**

**Instructional Video Hours per Module:**

Role of the BB	1
Support Leaders	3
Support Yellow Belts	4
Advanced Define	3
Advanced Measure	6
Advanced Analyze	7
Advanced Improve	4
<b>Advanced Control</b>	<b>3</b>
RIE Facilitator Guide	5



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## Module Description

**Course Number:** 06

**Module Name:**

Lean Six Sigma Black Belt – Kaizen Facilitator Guide


**About this Course:** This globally accredited Lean Six Sigma Black Belt course focuses on a modern approach to creating a high level of competency in the Black Belt supporting organizations with Lean Six Sigma efforts and in realizing significant ROI. This practical approach is not focused on a specific statistical software (such as MiniTab). Rather, it provides flexible and detailed instruction on why, when and how to use advanced analytical and problem-solving tools using Excel. This course includes a robust blend of advanced technical skills as well as the soft skills required to provide highly valuable support to leaders, Yellow Belts, Green Belts and to successfully lead Black Belt projects.

**Pre-Requisite Courses**

Lean Six Sigma Green Belt

**Key: Section Includes**

 Excel Template

 One-Point Lesson

## Module Topics

**Module Description:** This module provides detailed instruction and templates for the successful facilitation of a Rapid Improvement or Kaizen Event.

**Rapid Improvement Event (Kaizen) Facilitator Guide**

- Intro to RIE/Kaizen Event for Facilitators
- Kaizen Kickoff
- Prepare for the Event
- Facilitate the Event
- Event Follow Up

**Templates Included:**  x 14

- RIE Project Criteria
- RIE Team Selection
- RIE Project Charter
- Root Cause Evidence
- Participant Training Plan
- Event Agenda
- Logistics & Supplies
- Stakeholder Communication
- Event Leadership Welcome
- Interim Briefing
- Pilot Plan Checklist
- Implementation Checklist
- Action Items & Parking Lot
- Validate Results

## Course Time & PDUs



**Total Instructional Video: 36 Hours**

**Instructional Video Hours per Module:**

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Advanced Analyze	7
Advanced Improve	4
Advanced Control	3
<b>RIE Facilitator Guide</b>	<b>5</b>



**Estimated Engaged Time (Including Workbook Practice): 50 hours**

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**Lean6Sigma Academy**

A DIVISION OF CANSULT, INC.

Thank you



**CONNECT**



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