



# CENTRAL PIEDMONT COMMUNITY COLLEGE

## CORPORATE & CONTINUING EDUCATION

**Course Number:** CCP 7003  
**Course Title:** Six Sigma for the Consulting Professional  
**Course Hours:** 30

*Last Revised On:*

### **Description:**

Business Process Reengineering and Total Quality Management are not new to the business world. What is different is the method by which these goals are achieved. Six Sigma is not merely a quality initiative; it is a business initiative and is used by some of the most successful companies in America including GE, Motorola, Johnson & Johnson and American Express have experiences tens of thousands of dollars in savings through the deployment of Six Sigma. As part of the *Certified Consulting Professional* program, the participant will be trained in Six Sigma at the Green Belt level using online and instructor-led learning.

### **Objectives:**

- A comprehensive education of the Six Sigma methodology and Implementation including:
  - The participant will understand and define the quality philosophy of Six Sigma and DMAIC-L
  - The participant will identify benefits and objectives of Six Sigma
  - The participant will be able to outline the Six Sigma implementation process
  - The participant will identify and implement the DMAIC-L process including objectives and tools
  - The participant will demonstrate the differences between discrete or continuous data
  - The participant will define a defect and classify it by selected categories
  - The participant will develop a reliable and valid measurement for a system
  - The participant will be able to define the cost of poor quality (COPQ)
  - The participant will build a process map and be able to calculate the COPQ
  - The participant will identify if a savings from a quality initiative is "Hard" "Soft" or an Avoidance
  - The participant will demonstrate the use of appropriate tools of quality
  - The participant will be able to identify the benefits of validation of data and measurements
  - The participant will identify a capable process vs. a non-capable process
  - The participant will use the correct formula to calculate ROI
  - The participant will be able to understand and determine data from control charts
- What role Green Belts and other team members play in the success of Six Sigma
- How Project Teams Function - Things to watch out for
- How to control project definition, scope and work on Six Sigma projects
- Additional Project Tools - Brain Storming, Pareto Diagrams, Cause and Effect Analysis,
- Project Team Facilitation
- Project Presentations
- How to present projects to peers and managers, transition and close-out existing projects



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### Content:

- Introduction to the Course
  - Program Overview and Learning Objectives
  - Agenda Overview
  - Introduce online modules
  - Explain course requirements
  - Participant Expectations and Responsibilities
  - Introduction to Six Sigma
  - Introduce the DMAIC methodology
  
- Professional Service Quality
  - Understand the issues which impact Service Quality
  - Explore and understand the 5 constructs of Service Quality
  - Provide an overview of causes relating to Service Quality gaps
  
- DEFINE
  - Overview of DEFINE tools
  - Project Charter exercise
  - Demonstration of DEFINE tools
  - Role of a Facilitator
  - Facilitator exercise demonstrating DEFINE tools
  - Project report format
  
- MEASURE
  - MEASURE presentation
  - MEASURE exercise
  - MiniTab Gage R&R demonstration
  
- ANALYZE
  - ANALYZE presentation
    - Process Capability
    - Confidence Interval
    - Hypothesis Testing
    - Scatter Diagram
  - Excel demonstration of statistics
  
- IMPROVE and CONTROL
  - IMPROVE presentation
  - MiniTab DOE demonstration
  - CONTROL presentation



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- Central Limit Theorem exercise

### On-Line Modules

#### Module 1 - Six Sigma Introduction

- a. Green Belt overview
  - . Terms and Glossary
- a. Knowledge Assessment - Baseline
- b. Training process overview
- c. What is Six Sigma
  - . Six Sigma Process
- a. Sigma Consideration
- b. Implementation Considerations
- c. Personal Benefits of Six Sigma

#### Module 2 - Understanding Data

- . Project Organization
- . Data Measurement
- . Data Collection

#### Module 3 – Pareto Analysis

- . History of Pareto Chart
- . Building the Chart
- . Weighting the Categories

#### Module 4 – Calculating Process Based Costs

- . Understanding costs
- a. COPQ – Cost Of Poor Quality
- b. Potential Savings

#### Module 5 – Validating the Measurement System

- . Measurement systems
- a. Gauge R&R
- b. Total Variation



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### Module 6 - Understanding Processes

- . Process Mapping
- . Levels of Process Mapping
- . Process Tools - Cause and Effect Diagram
- . Brainstorming

### Module 7 – Failure Mode and Effects Analysis

- . FMEA
- a. Calculating RPN

### Module 8 – Introduction to Process Capability

- a. Populations and Samples
- . Assessing Process Capability

### Module 9 – Process Capability Assessments

- a. Natural Tolerance
- b. Using  $C_P$  and  $C_{PK}$
- a. Attribute Data

### Module 10 - Maximizing ROI

- . Solution Design Matrix
- a. Design of Experiments

### Module 11 - Sustaining ROI

- a. Control Plan
- . SPC - Statistical Process Control
- a. Benefits of a Control Plan
- b. Control Limits

### Module 12 – Types of Control Charts

- . Control Charts
- . Selecting the Appropriate Chart
- . Calculating Control Limits



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### Module 13 - Extending Project ROI

- a. Personal Commitments
  - . Major Benefits of Leverage
- a. Lessons Learned
- b. Your Role in Leveraging

#### **Prerequisites:**

- CCP 7000 Professional Consulting Skills or CCP 7001 Selling Services and Solutions

#### **Method of Instruction:**

- Lecture, Discussion, Online Modules

#### **Evaluation:**

- To graduate with Green Belt Certification, each student must:  
Demonstrate an understanding of the Six Sigma methodology and its tools by completing all assignments, quizzes, exams and a final project review.

Post Module score of  $\geq 80\%$

Certification Score of  $\geq 80\%$