# LICENSE AGREEMENT

This is a legal Agreement (the “Agreement”) between you as licensee (hereinafter, the "Licensee") and Quality America, Inc. an Arizona company (hereinafter referred to as "QA"). By downloading these Licensed Materials, you are agreeing to become bound by the terms and conditions of this Agreement. If you do not agree with the terms of this Agreement, promptly remove the Licensed Materials from your computer and cease any use of said Licensed Materials.

## Article I - Definitions

The following terms, when used in this Agreement, shall have the following meanings:

1.1 "Agreement" means this document including any Exhibits attached hereto.

1.2 “Approved Purpose” means the use of the Licensed Materials in connection with providing Six Sigma training to Licensee’s Students.

1.3 "Licensed Materials" means QA's Six Sigma training materials (in whole or in part) as more particularly described on Exhibit A attached hereto.

1.4 "Student" means any person receiving Six Sigma training from Licensee.

1.5 “Effective Date” means the date of original purchase of the Licensed Materials.

## Article 2 - License

2.1 QA hereby grants to Licensee, who hereby accepts, a non-exclusive, non-transferable license (the “License”) to use the Licensed Materials in accordance with this Agreement for the term specified below.

2.2 To the extent that the Licensed Material may be protected by copyright or other intellectual or industrial property rights of QA ("IP Rights"), Licensee shall have the rights to use of such Licensed Materials upon the terms set forth in this Agreement; provided, however, that this Agreement does not grant Licensee ownership of any of IP Rights in the Licensed Materials.

2.3 Subject to any limitations set forth in this Agreement, the License granted hereunder entitles Licensee to:

(a) use of the Licensed Materials for an Approved Purpose only.

(b) use of the Licensed Materials as MS PowerPoint slides only. To the extent that the Licensed Materials are located on electronic media, such Licensed Materials may be copied in electronic format for presentation purposes by the Licensee.

(c) distribute one (1) printed copy of MS PowerPoint slides to each Student, either as hardcopy or pdf files. Licensed Materials may not be made available for distribution in electronic format, including, without limitation, online access through an intranet or the Internet.

(d) modify the Licensed Materials to customize the Licensed Materials for Licensee's particular use in connection with an Approved Purpose, including, without limitation, translating the Licensed Materials into one or more languages other than English. Ownership in any translated version of the Licensed Materials, including without limitation, the copyright to such modifications, shall vest in QA. Licensee hereby assigns, transfers and conveys to QA any and all rights that Licensee may otherwise have in or to any such translated versions, and Licensee shall provide copies of any translated versions of the Licensed Materials to QA, provided that Licensee may, prior to providing QA with any such copies, remove from such modified versions of the Licensed Materials any information proprietary to Licensee. QA disclaims any ownership of any materials added by Licensee to the Licensed Materials.

2.4 Licensee agrees that it will not, except as provided in this Agreement, or as otherwise agreed in writing with QA, copy or duplicate the Licensed Materials or any part thereof.

## Article 3 - Intellectual Property Rights

3.1 The copyright and any other IP Rights that may exist in the Licensed Materials furnished to Licensee under this Agreement shall remain vested in QA.

3.2 Licensee shall not remove, alter or obliterate, or cause to be removed, altered or obliterated, the copyright notice affixed to slides provided to Licensee. (Other text and/or graphics may be removed or obliterated, but not edited to the extent that its original meaning is revised). Licensee agrees to acknowledge, in connection with its use of the Licensed Materials, the use of QA property. Licensee's rights hereunder shall continue only during the term of this Agreement and, upon termination of this Agreement, Licensee shall cease to use the Licensed Material.

3.3 In the event that Licensee utilizes the services of any third party in connection with the Licensee's use of the Licensed Materials, including, without limitation, any third party who translates the Licensed Materials into a language other than English, Licensee shall require that each such third party execute an Acknowledgment in the form of Exhibit B attached hereto prior to allowing use of the Licensed Materials by such third party.

## Article 4 - Remuneration and Payment

4.1 In consideration of the license to use the Licensed Materials as provided herein, upon execution of this Agreement the Licensee shall pay to QA the sums as designated on qualityamerica.com website at the time of purchase (the "License Fee") for each bundled set of topics, as defined in Exhibit A.

4.2 Student Fees: In addition to the License Fee specified in 4.1, the Licensee shall pay to QA within ten days of the start date of the training *at least one* of the following (for each student):

(a) the sum of $300 for each Student, plus shipping charges ("Black Belt Student Fee with

Certification & Textbooks"). Upon receipt of the Black Belt Student Fee with Certification & Textbooks, or within a reasonable time period, QA will send to the Licensee (or their designated assignee) one copy each of the following materials:

*Six Sigma Handbook*, by Thomas Pyzdek and Paul Keller.
*Six Sigma Demystified* by Paul Keller.
*IQF Exam* (download)
*IQF Study Guide* (download)

(b) the sum of $225 for each Student, plus shipping charges ("Black Belt Student Upgrade Fee with Textbooks") for any student who has previously registered and paid the Green Belt Student Fee with Certification & Textbooks or the Student Fee with Textbooks, and is now registering for the Black Belt Training. Upon receipt of the Black Belt Student Upgrade Fee with Textbooks, or within a reasonable time period, QA will send to the Licensee (or their designated assignee) one copy each of the following materials:

*IQF Exam* (download)
*IQF Study Guide* (download)

(c) the sum of $125 for each Student, plus shipping charges ("Green Belt Student Fee with Certification & Textbooks"). Upon receipt of the Green Belt Student Fee with Certification and Textbooks, or within a reasonable time period, QA will send to the Licensee (or their designated assignee) one copy each of the following materials:

*Six Sigma Handbook*, by Thomas Pyzdek and Paul Keller.
*Six Sigma Demystified* by Paul Keller.
Twelve-month access (beginning date of order) to QA's *Online Green Belt Study Guide & Exam*.
Signed *Green Belt Certification* form (upon successful completion of exam).

(d) the sum of $75 for each Student, plus shipping charges ("Student Fee with Textbooks"). Upon receipt of the Student Fee with Textbooks, or within a reasonable time period, QA will send to the Licensee (or their designated assignee) one copy each of the following materials:

*Six Sigma Handbook*, by Thomas Pyzdek and Paul Keller.
*Six Sigma Demystified* by Paul Keller.

(e) the sum of $20 for each Student, plus shipping charges ("Six Sigma Demystified Student Fee"). Upon receipt of the Student Fee with Textbooks, or within a reasonable time period, QA will send to the Licensee (or their designated assignee) one copy each of the following materials:

*Six Sigma Demystified* by Paul Keller.

(f) Twelve-month access (beginning date of order) to Quality America's online certification courses ("Student Online Access"), excluding books and software (i.e. access to online slides, quizzes and exam only; excludes IQF materials) for the following additional per-student fees:

1. Champion Certification: $30 if Licensed Materials includes all Champion topics; $60 otherwise.
2. Green Belt Certification: $130 if Licensed Materials includes all Green Belt topics; $260 otherwise.
3. Black Belt Certification: $220 if Licensed Materials includes all Black Belt topics; $440 otherwise.

(g) A student license ("Student Software License"), providing twelve months' access from date of order, of either:

4. Quality America's *SPC IV Excel* software, for an additional fee of $40 per student; or
5. Quality America's *Green Belt XL* software, for an additional fee of $60 per student; or
6. Quality America's *Black Belt XL* software, for an additional fee of $80 per student.

(h) Twelve-month access (beginning date of order) to Quality America's online short courses for the following additional per-student fees:

7. 60% discount from retail prices published on qualityamerica.com website for online short courses containing same topics as Licensed Materials, or,
8. 20% discount from retail prices published on qualityamerica.com website for online short courses containing different topics as Licensed Materials.

4.3 Licensee shall be fully and exclusively responsible for the payment of all sales, use or similar taxes arising as a result of this Agreement.

4.4 In addition to the License Fee specified in 4.1, upon execution of this Agreement the Licensee may, at their discretion, pay to QA the sum (the "Annual Support Fee") of 15% of the License Fee to receive periodic updates to the Licensed Materials that QA may issue within the twelve months following the Effective Date of the Agreement.

## Article 5 - Termination

This Agreement is effective from the Effective Date until terminated. You may terminate this License at any time, or it will terminate automatically without notice from Quality America if you fail to comply with any provision of this License. Upon termination for any reason, you shall destroy the Licensed Materials together with any accompanying written materials and all copies, modifications and merged portions in any form. Notwithstanding the above, QA may terminate this Agreement with immediate effect upon Licensee's receipt of written notification to that effect in the event that Licensee fails to remedy any material default in the performance of its obligations hereunder with respect to QA's property rights in the Licensed Materials for a period of ninety (90) days after QA has given written notice to Licensee specifying such default and requesting the same to be remedied.

Upon termination of this Agreement pursuant to this Article 5, Licensee will either return to QA all copies of the Licensed Materials or will certify in writing to QA that all such copies have been destroyed.

## Article 6 - Miscellaneous

6.1 This Agreement sets forth the entire agreement and understanding between the parties with respect to the subject matter thereof and supersedes all prior oral and written agreements and understandings between them relating thereto.

6.2 No amendment, alteration or modification of this Agreement shall be effective unless made in writing and signed both by QA and Licensee.

6.3 No term or provision of this Agreement shall be deemed waived and no breach excused, unless such waiver or consent shall be in writing and signed by the party claimed to have waived or consented. Any consent by any party to, or waiver of, breach of the other, whether express or implied, shall not constitute a consent to, waiver or, or excuse for any other different or subsequent breach.

6.4 If any term or provision of this Agreement shall be found to be illegal or unenforceable, then, notwithstanding any such illegality or unenforceability, this Agreement shall remain in full force and effect and such term or provision shall be deemed to be deleted.

6.5 The headings appearing above the provisions of this Agreement are inserted for convenience only and shall not affect the interpretation or operation of this Agreement.

6.6 All notices and other communications the parties are required to send to one another under this Agreement shall be given in writing and shall be sent to the addresses indicated on the signature page below, or at such other address as may be designated in writing hereafter by the parties. A telex or telefax message shall be considered to be a written notice. If mailed, such notice, demand or request shall be made by certified or registered mail, and deposited in any post office station or letter-box, enclosed in a postage paid envelope, and shall be deemed to have been made on the second (2nd) business day following posting as aforesaid. If commercially sent, the party giving such notice shall use a recognized, commercial courier service and notice shall be deemed to have been made on the day of actual receipted delivery to the addressee. If sent by facsimile transmission, the party sending the transmission shall send it to the facsimile number, if any, set forth below on the signature pages hereof, or to such other number as a party hereto shall direct by written notice given in accordance with Section. Delivery shall be deemed to have been made on the day that the facsimile transmission occurred, if received prior to 4:00 p.m. on a business day at the place of receipt, otherwise on the following business day. References to a "business day" shall mean a day which is not a Saturday, Sunday or legal holiday in Arizona.

6.7 Neither party shall assign or transfer its rights and obligations under this Agreement to any third party without the prior written consent of the other party, provided, however, that each party shall be entitled to assign its rights and obligations hereunder to its successor hereunder to its successor in interest in the event of a merger or consolidation into another entity (an "Approved Transfer").

6.8 Subject to Section 6.7 above, this Agreement shall inure to the benefit of, and be binding upon, the respective successors and assigns, if any, of the parties.

6.9 This Agreement shall in all respects be exclusively governed by and interpreted in accordance with the laws of the State of Arizona.

**EXHIBIT A**

**(Description of Licensed Materials)**

## A. Intro. to LSS

1. Six Sigma Introduction
   a) Definition of Six Sigma & Its Relation to Costs and Efficiencies
   b) Popularity and Application of Six Sigma
   c) Comparisons Between Typical TQM and Six Sigma Programs
2. How to Deploy Six Sigma
   a) Leadership responsibilities.
   b) Resource allocation.
   c) Data driven decision making.
   d) Organizational metrics and dashboards.
3. Six Sigma Projects
   a) Project Focus
      (i) Is it a Six Sigma Project?
      (ii) Customer Focused Projects
   b) Project Selection
   c) Estimating Project Benefits
   d) Overview of DMAIC methodology.
   e) Project Reporting.
4. Training & Personnel
   a) Management Training
   b) Champion Selection & Training
   c) Black Belt Selection & Training
   d) Green Belt Selection & Training
   e) Ongoing Training

## B. DMAIC Essentials

1. Six Sigma Projects
   a) Project Focus
      (i) Is it a Six Sigma Project?
      (ii) Customer Focused Projects
   b) Project Selection
   c) Estimating Project Benefits
   d) Overview of DMAIC methodology.
   e) Project Reporting.
2. Define Stage Tools & Objectives

a) Define Stage Objectives
b) Project Charter: Use and Development
    (i) Work Breakdown Structure
    (ii) Pareto Diagrams
    (iii) Process Maps
    (iv) SIPOC
    (v) Matrix Diagrams

3. DEFINE: Metrics & Deliverables
    a) Critical to Quality (CTQ) Metrics
        (i) Throughput Yield (and comparison to traditional yield)
        (ii) Rolled Throughput Yield
        (iii) Normalized Yield
        (iv) DPMO: Use and Misuse
        (v) Sigma Level
    b) Critical to Schedule (CTS) Metrics
        (i) Cycle Time
        (ii) Process Cycle Efficiency
        (iii) Process Velocity
        (iv) Overall Equipment Effectiveness (OEE)
    c) Relation of CTQ and CTS Metrics to Critical to Cost (CTC) Metrics
4. DEFINE: Project Financials
    a) Cost of Poor Quality.
    b) Quantifying Project Benefits.
    c) CTC Calculations.
5. DEFINE: Project Scheduling
    a) Managing Project Schedules
    b) Critical Path / PERT Analysis
    c) GANTT Chart
6. DEFINE: Change Management / Teams
    a) Problems With Change
    b) Achieving Buy-In.
    c) Team Formation, Rules & Responsibilities.
        (i) Stages of Team Development.
        (ii) Overcoming Problems.
    d) Consensus Building
        (i) Affinity Diagram.
        (ii) Nominal Group Technique.
        (iii) Prioritization Matrix.

7. Measure Stage Tools and Objectives
    a) Measure Stage Objectives.
    b) Process Definition
        (i) Flowcharts
        (ii) Process Maps
        (iii) SIPOC
    c) Process Metrics (CTQ, CTC, CTS).
    d) Establishing Process Baseline.
        (i) Enumerative vs. Analytic Statistics.
        (ii) Process Variation & Deming's Red Bead.
        (iii) Benefits of Control Charts.
        (iv) Requirements vs. Control / Tampering.
        (v) Control Chart as a Process Baseline Tool.
8. Analyze Stage Tools & Objectives
    a) Analyze Stage Objectives.
    b) Lean Definition of Waste.
    c) Analyzing Process for NVA
        (i) Cycle Efficiencies
        (ii) Lead Time and Velocity
        (iii) Takt Time
    d) Methods to Increase Velocity
        (i) Standardization
        (ii) Optimization
        (iii) Spaghetti Diagrams
        (iv) Level Loading
        (v) When are Batches More Efficient?
        (vi) Setup Reductions
9. Improve Stage Tools and Objectives
    a) Improve Stage Objectives.
    b) Tools to Prioritize Improvement Opportunities.
    c) Tools to Define New Process Flow.
        (i) Lean Tools to reduce NVA and Achieve Flow.
        (ii) 5S
        (iii) Level Loading
    d) Tools to Define & Mitigate Failure Modes.
        (i) PDPC.
        (ii) FMECA.
        (iii) Preventing Failures.

e) Reference to Tools for Defining New Process Levels.

10. Control Stage Tools and Objectives
    a) Control Stage Objectives.
    b) Methods of Control.
    c) Control Plans.
    d) Training.
    e) Measuring Improvement.
    f) Applying Lessons Learned.
11. Design for Six Sigma Overview
    a) Methodology.
    b) Tools for DFSS.
    c) System, Parameter and Tolerance Designs.

## C. SPC Essentials

1. Measure Stage Tools and Objectives
    a) Measure Stage Objectives.
    b) Process Definition
        (i) Flowcharts
        (ii) Process Maps
        (iii) SIPOC
    c) Process Metrics (CTQ, CTC, CTS).
    d) Establishing Process Baseline.
        (i) Enumerative vs. Analytic Statistics.
        (ii) Process Variation & Deming's Red Bead.
        (iii) Benefits of Control Charts.
        (iv) Requirements vs. Control / Tampering.
        (v) Control Chart as a Process Baseline Tool.
2. MEASURE: X-Bar Charts
    a) Uses.
    b) Construction & Calculations.
    c) Assumptions.
    d) Rational Subgroups.
    e) Sampling Considerations.
    f) Interpretation, including Run Test Rules.
3. MEASURE: Individuals Data
    a) Uses, Comparison with X-Bar Chart.
    b) Construction, Calculations, Assumptions, Sampling Considerations and Interpretation:

(i) Run Charts.
(ii) Individual-X / Moving Range Charts
(iii) Moving Average Charts.
(iv) EWMA Charts.

4. MEASURE: Process Capability
   a) Histograms Use and Misuse.
   b) Probability Plots.
   c) Goodness of Fit Tests.
   d) Capability & Performance Indices.
      (i) Relative to Process Control.
      (ii) Interpretation.
      (iii) Estimating Error.
5. MEASURE: Attribute Charts
   a) Uses.
   b) Selection (P, U, Np, C Charts).
   c) Construction & Calculations.
   d) Sampling Considerations.
   e) Interpretation, including Run Test Rules.
6. MEASURE: Short Run SPC
   a) Uses.
   b) Calculations.
      (i) Nominals chart.
      (ii) Stabilized Chart.
7. MEASURE: Serial Correlation
   a) Applications.
   b) Estimating Autocorrelation.
   c) Interpreting Autocorrelation.
   d) Batch Control Charts.

## D. MSA

1. MEASURE: Measurement Systems Analysis
   a) Stability Studies.
   b) Linearity Analysis.
   c) R&R Analysis.
      (i) Range Method Calculations.
      (ii) Interpretation.
      (iii) Using Control Charts.
      (iv) Destructive Tests.

(v) ANOVA Method.

## E. Intro to Statistics

1. MEASURE: Probability & Distributions.
   a) General Probability Rules.
   b) Description, Use & Interpretation in MS Excel & Minitab:
      (i) Binomial.
      (ii) Hypergeometric.
      (iii) Poisson.
      (iv) Normal.
      (v) LogNormal.
      (vi) Exponential.
      (vii) Weibull.
   c) Probability Plots.
   d) Goodness of Fit tests (A-D & K-S).
   e) Curve Fitting with Johnson Distributions.
2. ANALYZE: ANOVA
   a) Assumptions.
   b) Bartlett's Equality of Variance Test
   c) One-Way ANOVA in Excel & Minitab
   d) Two-Way ANOVA in Excel & Minitab
   e) Multi-Factor ANOVA in Excel & Minitab
      (i) Tukey's HSD Test
3. ANALYZE: Sources of Variation
   a) Multi-vari Plots.
   b) Confidence Intervals on Mean.
   c) Confidence Intervals on Percent.
   d) Hypothesis Test on Mean.
   e) Hypothesis Test on Paired Mean.
   f) Hypothesis Test on Mean of Two Samples.
   g) Hypothesis Test on Variance.
   h) Hypothesis Test on Variance of Two Samples.
   i) Contingency tables.
   j) Power & Sample Size.
   k) Non-parametric Tests.

## F. Intro. To Regression

1. ANALYZE: Intro. To Regression Analysis

a) Cause & Effect Diagrams
b) Scatter Diagrams.
   (i) Types of Correlation
   (ii) Stratification
   (iii) Extrapolation
c) Linear Regression Model.
d) Interpreting the ANOVA Table.
e) Confidence & Prediction Limits.
f) Residuals Analysis.
g) Overview of Multiple Regression Tools, including Designed Experiments

2. ANALYZE: Multiple Regression
   a) Multivariate Models.
   b) Interaction Plots.
   c) Interpreting ANOVA Tables.
   d) Model Considerations.
   e) Stepwise Regression.
   f) Residuals Analysis.
3. ANALYZE: Transformations
   a) Need for Transformations.
   b) Non-Constant Variance.
   c) Box-Cox Transforms.
   d) Calculated Parameters.
   e) Taguchi Signal to Noise Ratios.

## G. Introduction to Designed Experiments

1. ANALYZE: Introduction to Designed Experiments
   a) Terminology
   b) DOE vs. Traditional Experiments
   c) DOE vs. Historical Data
   d) Design Planning.
   e) Design Specification.
      (i) Selecting Responses.
      (ii) Selecting Factors and Levels.
   f) Complete Factorials.
   g) Fractional Factorials.
      (i) Aliasing.
      (ii) Screening Designs.
2. ANALYZE: DOE Analysis Fundamentals
   a) Estimating Effects and Coefficients.

b) Significance Plots.
c) Estimating Error & Lack of Fit.
d) Extending Designs.
e) Power of Design.
f) Tests for Surface Curvature.

3. ANALYZE: Design Selection
   a) Desirable Designs.
   b) Performance.
      (i) Balance.
      (ii) Orthogonality.
      (iii) Resolution.
   c) Other Design Models.
      (i) Saturated Designs.
      (ii) Plackett Burman Designs.
      (iii) Johns 3/4 Designs.
      (iv) Central Composite Designs.
      (v) Box Behnken Designs.
      (vi) Taguchi Designs (mention).

## H. Advanced DOE

1. IMPROVE: Response Surface Analysis
   a) Objectives.
   b) Applications.
   c) Sequential Technique.
   d) Steepest Ascent.
2. IMPROVE: Ridge Analysis
   a) Graphical Method.
   b) Analytical Method.
   c) Overlaid Contours.
   d) Desirability Function.
3. IMPROVE: Evolutionary Operation
   a) Methodology.
   b) Example.
   c) Risks & Advantages.
4. IMPROVE: Simulations
   a) Applications.
   b) Examples.
   c) Applying Probabilistic Estimates.

# I. Champion Certification

1. Six Sigma Introduction
   a) Definition of Six Sigma & Its Relation to Costs and Efficiencies
   b) Popularity and Application of Six Sigma
   c) Comparisons Between Typical TQM and Six Sigma Programs
2. How to Deploy Six Sigma
   a) Leadership responsibilities.
   b) Resource allocation.
   c) Data driven decision making.
   d) Organizational metrics and dashboards.
3. Six Sigma Projects
   a) Project Focus
      (i) Is it a Six Sigma Project?
      (ii) Customer Focused Projects
   b) Project Selection
   c) Estimating Project Benefits
   d) Overview of DMAIC methodology.
   e) Project Reporting.
4. Training & Personnel
   a) Management Training
   b) Champion Selection & Training
   c) Black Belt Selection & Training
   d) Green Belt Selection & Training
   e) Ongoing Training
5. Define Stage Tools & Objectives
   c) Define Stage Objectives
   d) Project Charter: Use and Development
      (i) Work Breakdown Structure
      (ii) Pareto Diagrams
      (iii) Process Maps
      (iv) SIPOC
      (v) Matrix Diagrams
6. DEFINE: Metrics & Deliverables
   a) Critical to Quality (CTQ) Metrics
      (i) Throughput Yield (and comparison to traditional yield)
      (ii) Rolled Throughput Yield
      (iii) Normalized Yield
      (iv) DPMO: Use and Misuse

(v) Sigma Level

b) Critical to Schedule (CTS) Metrics
   (i) Cycle Time
   (ii) Process Cycle Efficiency
   (iii) Process Velocity
   (iv) Overall Equipment Effectiveness (OEE)

c) Relation of CTQ and CTS Metrics to Critical to Cost (CTC) Metrics

7. DEFINE: Change Management / Teams
   a) Problems With Change
   b) Achieving Buy-In.
   c) Team Formation, Rules & Responsibilities.
      (i) Stages of Team Development.
      (ii) Overcoming Problems.
   d) Consensus Building
      (i) Affinity Diagram.
      (ii) Nominal Group Technique.
      (iii) Prioritization Matrix.

## J. Champion Certification

1. Six Sigma Introduction
   a) Definition of Six Sigma & Its Relation to Costs and Efficiencies
   b) Popularity and Application of Six Sigma
   c) Comparisons Between Typical TQM and Six Sigma Programs
2. How to Deploy Six Sigma
   a) Leadership responsibilities.
   b) Resource allocation.
   c) Data driven decision making.
   d) Organizational metrics and dashboards.
3. Six Sigma Projects
   a) Project Focus
      (i) Is it a Six Sigma Project?
      (ii) Customer Focused Projects
   b) Project Selection
   c) Estimating Project Benefits
   d) Overview of DMAIC methodology.
   e) Project Reporting.
4. Training & Personnel
   a) Management Training
   b) Champion Selection & Training

c) Black Belt Selection & Training
d) Green Belt Selection & Training
e) Ongoing Training

5. Define Stage Tools & Objectives
   a) Define Stage Objectives
   b) Project Charter: Use and Development
      (i) Work Breakdown Structure
      (ii) Pareto Diagrams
      (iii) Process Maps
      (iv) SIPOC
      (v) Matrix Diagrams
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      (ii) Rolled Throughput Yield
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      (v) Sigma Level
   b) Critical to Schedule (CTS) Metrics
      (i) Cycle Time
      (ii) Process Cycle Efficiency
      (iii) Process Velocity
      (iv) Overall Equipment Effectiveness (OEE)
   c) Relation of CTQ and CTS Metrics to Critical to Cost (CTC) Metrics
7. DEFINE: Change Management / Teams
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   c) Team Formation, Rules & Responsibilities.
      (i) Stages of Team Development.
      (ii) Overcoming Problems.
   d) Consensus Building
      (i) Affinity Diagram.
      (ii) Nominal Group Technique.
      (iii) Prioritization Matrix.

## K. Green Belt Certification

1. Six Sigma Introduction
   a) Definition of Six Sigma & Its Relation to Costs and Efficiencies
   b) Popularity and Application of Six Sigma

   c) Comparisons Between Typical TQM and Six Sigma Programs
2. How to Deploy Six Sigma
   a) Leadership responsibilities.
   b) Resource allocation.
   c) Data driven decision making.
   d) Organizational metrics and dashboards.
3. Six Sigma Projects
   a) Project Focus
      (i) Is it a Six Sigma Project?
      (ii) Customer Focused Projects
   b) Project Selection
   c) Estimating Project Benefits
   d) Overview of DMAIC methodology.
   e) Project Reporting.
4. Define Stage Tools & Objectives
   a) Define Stage Objectives
   b) Project Charter: Use and Development
      (i) Work Breakdown Structure
      (ii) Pareto Diagrams
      (iii) Process Maps
      (iv) SIPOC
      (v) Matrix Diagrams
5. DEFINE: Metrics & Deliverables
   a) Critical to Quality (CTQ) Metrics
      (i) Throughput Yield (and comparison to traditional yield)
      (ii) Rolled Throughput Yield
      (iii) Normalized Yield
      (iv) DPMO: Use and Misuse
      (v) Sigma Level
   b) Critical to Schedule (CTS) Metrics
      (i) Cycle Time
      (ii) Process Cycle Efficiency
      (iii) Process Velocity
      (iv) Overall Equipment Effectiveness (OEE)
   c) Relation of CTQ and CTS Metrics to Critical to Cost (CTC) Metrics
6. DEFINE: Project Scheduling
   a) Managing Project Schedules
   b) Critical Path / PERT Analysis

c) GANTT Chart

7. DEFINE: Change Management / Teams
   a) Problems With Change
   b) Achieving Buy-In.
   c) Team Formation, Rules & Responsibilities.
      (i) Stages of Team Development.
      (ii) Overcoming Problems.
   d) Consensus Building
      (i) Affinity Diagram.
      (ii) Nominal Group Technique.
      (iii) Prioritization Matrix.
8. Measure Stage Tools and Objectives
   a) Measure Stage Objectives.
   b) Process Definition
      (i) Flowcharts
      (ii) Process Maps
      (iii) SIPOC
   c) Process Metrics (CTQ, CTC, CTS).
   d) Establishing Process Baseline.
      (i) Enumerative vs. Analytic Statistics.
      (ii) Process Variation & Deming's Red Bead.
      (iii) Benefits of Control Charts.
      (iv) Requirements vs. Control / Tampering.
      (v) Control Chart as a Process Baseline Tool.
9. MEASURE: X-Bar Charts
   a) Uses.
   b) Construction & Calculations.
   c) Assumptions.
   d) Rational Subgroups.
   e) Sampling Considerations.
   f) Interpretation, including Run Test Rules.
10. MEASURE: Individuals Data
   a) Uses, Comparison with X-Bar Chart.
   b) Construction, Calculations, Assumptions, Sampling Considerations and Interpretation:
      (i) Run Charts.
      (ii) Individual-X / Moving Range Charts
      (iii) Moving Average Charts.

(iv) EWMA Charts.

11. MEASURE: Process Capability
    a) Histograms Use and Misuse.
    b) Probability Plots.
    c) Goodness of Fit Tests.
    d) Capability & Performance Indices.
        (i) Relative to Process Control.
        (ii) Interpretation.
        (iii) Estimating Error.
12. MEASURE: Attribute Charts
    a) Uses.
    b) Selection (P, U, Np, C Charts).
    c) Construction & Calculations.
    d) Sampling Considerations.
    e) Interpretation, including Run Test Rules.
13. MEASURE: Green Belt Tools Workshop
    a) Data Collection Workshop
    b) MSA Analysis of Data
    c) Control Chart Analysis of Data
    d) Capability Analysis of Data
14. Analyze Stage Tools & Objectives
    a) Analyze Stage Objectives.
    b) Lean Definition of Waste.
    c) Analyzing Process for NVA
        (i) Cycle Efficiencies
        (ii) Lead Time and Velocity
        (iii) Takt Time
    d) Methods to Increase Velocity
        (i) Standardization
        (ii) Optimization
        (iii) Spaghetti Diagrams
        (iv) Level Loading
        (v) When are Batches More Efficient?
        (vi) Setup Reductions
15. ANALYZE: Sources of Variation (*Not required for QA certification)
    a) Multi-vari Plots.
    b) Confidence Intervals on Mean.
    c) Confidence Intervals on Percent.

d) Hypothesis Test on Mean.
e) Hypothesis Test on Paired Mean.
f) Hypothesis Test on Mean of Two Samples.
g) Hypothesis Test on Variance.
h) Hypothesis Test on Variance of Two Samples.
i) Contingency tables.
j) Power & Sample Size.
k) Non-parametric Tests.

16. ANALYZE: Designed Experiments Basics (*Not required for QA certification)
    a) Terminology
    b) DOE vs. Traditional Experiments
    c) DOE vs. Historical Data
    d) Design Planning.
    e) Design Specification.
        (i) Selecting Responses.
        (ii) Selecting Factors and Levels.
17. ANALYZE: Intro. To Regression Analysis
    a) Cause & Effect Diagrams
    b) Scatter Diagrams.
        (i) Types of Correlation
        (ii) Stratification
        (iii) Extrapolation
    c) Linear Regression Model.
    d) Interpreting the ANOVA Table.
    e) Confidence & Prediction Limits.
    f) Residuals Analysis.
    g) Overview of Multiple Regression Tools, including Designed Experiments
18. Improve Stage Tools and Objectives
    a) Improve Stage Objectives.
    b) Tools to Prioritize Improvement Opportunities.
    c) Tools to Define New Process Flow.
        (i) Lean Tools to reduce NVA and Achieve Flow.
        (ii) 5S
        (iii) Level Loading
    d) Tools to Define & Mitigate Failure Modes.
        (i) PDPC.
        (ii) FMECA.
        (iii) Preventing Failures.

e) Reference to Tools for Defining New Process Levels.

19. Control Stage Tools and Objectives
    a) Control Stage Objectives.
    b) Methods of Control.
    c) Control Plans.
    d) Training.
    e) Measuring Improvement.
    f) Applying Lessons Learned.

## K. Black Belt Certification: (all 35 topics noted above for all categories)

**EXHIBIT B**

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