

Program Syllabus – Industrial



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Program Rationale: Today, more than ever before, organizations of all types are questing for top and bottom line improvement. This journey is no longer considered a side-bar activity; rather, it is now viewed as a critical business imperative. Of course, this means that business executives must find new and innovative ways to reduce their total cost structure, improve capability and increase capacity, but done so without capital investment.

These executives also understand that, to achieve this mission, they must improve their core processes, yet done so in an economical, repeatable and verifiable way.

Naturally, the realization of this grand vision requires process improvement leaders – individuals that have the capability to yield beneficial change in a relatively short period of time. When leaders of this caliber are enabled by the power of Lean Six Sigma, quantum business improvements are not only possible, but highly probable.

Hence, we have the compelling need to develop and disseminate competency-based, process-centric training that can support the rapid deployment and effective implementation of Lean Six Sigma know-how. To this end, the Six Sigma Management Institute offers online competency-based *Lean Six Sigma (LSS)* training programs, where each program is delivered through the proven MindPro® learning system.

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Program Introduction: In its purest form, Lean Six Sigma is about leveraging the principles and tools of science to abate business risk – at all levels of an enterprise. With this in mind, we can view the practice of Lean Six Sigma (LSS) from four different altitudes.

At its highest level, LSS is a strategic vision that epitomizes business success. Second, it is a tactical system of project management that optimizes the control function of a commercial or industrial enterprise. Third, it is a scientific approach for minimizing or eliminating certain forms of business risk commonly associated with the operation of critical processes. Fourth, it is a personal way of thinking that unites the power of deductive reasoning with the benefits commonly associated with data-driven decision making.

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Core Competencies: A Lean Six Sigma competency is simply a standardized set of related knowledge, skills, and abilities that are essential to create and sustain processes improvements, regardless of process type or output volume. From this perspective, the core competencies commonly associated with the Lean Six Sigma Body-of-Knowledge (LSS-BOK) are as follows:

- Define process-centric problems
- Measure critical process outputs and inputs
- Analyze process performance data
- Improve existing process conditions
- Control critical process outputs and inputs

Of course, the required scope and depth to which each competency must be practiced is largely dependent upon an individual's contributory role within the organization. For example, an Industrial Green Belt's LSS-BOK is generally more comprehensive and technical than that of a Yellow Belt or White Belt. In this sense, the reach of an Industrial Green Belt is broader and deeper than that of other general LSS practitioners.

Of course, each of the related MindPro® training programs (and certification process) has been carefully designed to develop and reinforce each of the aforementioned competencies, as well as continually emphasize their intrinsic value.

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Program Description:

The Lean Six Sigma Green Belt - Industrial Program-of-Study is intended to develop technical leaders that are capable of propelling their respective organizations toward best-in-class status by reducing costs, improving cycle times, eliminating defects, eliminating variation and significantly increasing customer satisfaction.

Industrial Green Belts are highly trained practitioners who possess the technical knowledge and skills that are necessary to facilitate breakthrough improvements in key processes that support the overall business aims and operational goals of an enterprise. In summary, Industrial Green Belts are individual contributors or front line managers that:

- Serve as change agents, internal consultants, mentor to Yellow and White Belts, as well as assist Black Belts.
- Work with project teams to optimize existing technology, or bring new technologies on line at optimal operating conditions.
- Practice the art and science of solving process-centric problems through the analysis of performance data.
- Implement technical and leadership capability to improve the performance of an existing industrial or commercial process, regardless of complexity or output volume.
- Solve specific process-oriented or design-centric problems that have a negative impact on customer satisfaction, operational capability, output capacity, cycle time and other performance-related metrics.

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Program Outline:

The body of knowledge associated with this 8 week program-of-study is organized into three primary segments; namely, *Global Concepts*, *General Practices* and *Technical Practices*. In terms of structure, each program segment is comprised of core topics. In turn, the topics are defined by competency-based training modules, where each module is comprised of instructional steps. The segment and topic titles associated with the Green Belt - Industrial Program of Study are as follows:

Global Concepts

- Training Orientation
- Breakthrough Vision

- Business Principles
- Process Management
- Installation Guidelines
- Application Projects

General Practices

- Value Focus
- Lean Practices
- Quality Tools
- Basic Statistics
- Continuous Capability
- Discrete Capability

Technical Practices

- Hypothesis Testing
- Confidence Intervals
- Control Methods
- Parametric Methods
- Experimental Methods
- Measurement Analysis
- Training Project

Program Goals: Upon completion of this program of study, the student will be able to successfully:

- Practice the Six Sigma DMAIC methodology and the related set of analytical tools
- Apply the Lean Six Sigma knowledge and skills in support of work-team goals, objectives and tasks
- Implement the DMAIC methodology and tools to accomplish Green Belt level projects
- Utilize the principles and practices of Lean Six Sigma to better frame and solve daily problems
- Improve business value for the customer and provider in a concurrent and synergistic way.

Program Focus: The Green Belt - Industrial program of study will focus on several key areas:

- Six Sigma principles, practices, deployment strategies and implementation tactics
- Lean principles, practices and implementation tactics

- Basic statistics, benchmarking methods, process control techniques, process diagnostic methods and variable search methods
- Types and uses of performance data, sampling schemes and data collection
- Project success criteria, charter elements, execution milestones and review guidelines
- Principles and practices associated with process characterization and optimization.

Participants of this certification program will execute a digital training project contained within MindPro® and be tested at the evaluation center (if seeking certification). Following formal training, the simulated project provides each student with the opportunity to exercise all the key tools and methods, yet done so in the context of a life-like DMAIC project.

In this way, students are able to practice their new skills in a controlled environment and then be evaluated on their efforts prior to being made responsible for the execution of a live on-the-job value-centric project.

Target Audience: This program of study has been designed for individual contributors and managers seeking vertical mobility or pursuing horizontal opportunities within their respective fields of practice. The successful candidate enjoys working with data and solving problems, as well as working in a project-based, team-oriented environment.

Training Prerequisites: Basic arithmetic skills are essential (i.e., be able to perform addition, subtraction, multiplication, division and work with fractions and decimals). Basic computer skills are also essential. In this context, a rudimentary understanding of Excel is highly recommended, but not essential. A readiness assessment is freely offered at www.mindprotesting.com.


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Instructor Profile:

Dr. Mikel J. Harry has been widely recognized and cited in many publications as the principal architect of Six Sigma and the world's leading authority within this field. His book entitled *Six Sigma: The Management Strategy Revolutionizing the World's Top Corporations* has been on the best seller list of the Wall Street Journal, Business Week, and Amazon.com.

Dr. Harry has been a consultant to many of the world's top CEOs and has been a featured guest on such television programs as the NBC show *Power Lunch*. In addition, he has been distinguished by Arizona State University with the 2002 Engineering Excellence Award for superb achievements in the engineering profession and notable contributions to society. At the present time, Dr. Harry is President and Chairman of the Six Sigma Management Institute.


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Program Schedule: The total instructional time for the Green Belt - Industrial program is approximately 80 hours. The actual task-time will vary, depending on the selected delivery system. If a student is pursuing an independent self-paced program of study (via MindPro®), the recommended schedule is 2 hours per day. At this rate of progress, the typical student will have completed the formal training in 2 months. If the student is progressing through a blended learning model, the assigned program schedule will be established by the local instructor or facilitator.


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Getting Started: The MindPro® learning system is extremely easy to use and includes a complete tutorial. The tutorial provides a fully illustrated discussion on how to get started using the key features and functionality associated with MindPro® and the Black Belt program of study. QuickTime is required to view the tutorial; a download link is provided within the Help page of MindPro. Of course, the student can gain many insights into the MindPro® system and its many features by simply exploring the syllabus.


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Delivery Platforms: The MindPro® Knowledge Transfer System is comprised of five (5) primary delivery platforms which can be combined in various configurations for each client and their different groups. These delivery platforms appear as navigational tabs within MindPro and are defined as follows:

- **Best Practice Coach:** Filtered database queries that provide results in a manner consistent with search engines. These results may include coaching packets, which serve as mini curriculums, or individual media. All results are displayed in their proper learning order.
- **Keyword Search:** Word search capability that allows the MindPro database to be searched for known words. These results may include coaching packets, which serve as mini curriculums, or individual media. All results are displayed in their proper learning order.
- **Resources:** Includes a wide array of supplemental learning resources such as calculators, simulators, exercises, reference documents, and subject matter relative web links.
- **Body of Knowledge:** This Lean Six Sigma Body of Knowledge is the master video curriculum for all MindPro Training Programs. It is often utilized by instructors or trainers to construct custom programs the client would deliver in a digital or blended training program.
- **Training Programs:** Executable training programs that are client and group specific. These may be designed as self paced digital delivery, such as open enrollment, or scheduled and blended delivery depending on client needs.


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Instructional Methods: All of the MindPro® programs of study are delivered through video-based instruction. The *Instruction* videos present Dr. Harry's 5 minute lectures in progressive order, while the *Expansion* and *Application* videos extend the lectures through real-world examples, animations and simulations using Excel and Minitab:

- **Instruction Video:** Provides lecture type knowledge, utilizing over-the-experts-shoulder-style instruction
- **Expansion Video:** Builds upon what was learned in the instruction videos by using animations, simulations and examples to expand the content's scope and depth.
- **Application Video:** Demonstrates how the central ideas can be put to practical use through Excel and Minitab.


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Computer Simulations: The MindPro® process simulators (and DOE simulator) can be used to generate life-like data for a single dependent variable and eight

independent variables. Once activated, the simulated data can then be copied to clipboard and easily transferred to Minitab (or another spreadsheet) for subsequent analysis.

The process simulator has enormous flexibility and a wide range of instructional applications. At several points within the MindPro Body-of-Knowledge, the Process Simulator is used by Dr. Harry to demonstrate how various tools should be executed and properly interpreted.

Of course, the student (or instructor) can emulate these demonstrations to further the instructional content. The process simulators can also be employed in a blended learning environment to create meaningful life-like exercises.

Discussion Forums: The Six Sigma Management Institute hosts a private *Discussion Forum* for the convenience of its online students. In addition, private and hidden forums can be provided to corporate clients who would like the convenience of this group communication tool for their training program.

This forum is a courtesy, not a right. As a consequence, participants are always expected to adhere to common protocols and conventions. Participation in the forum can be terminated for improper posting (i.e., derogatory comments, defamatory remarks and so on). Acceptable social etiquette is essential to retain forum privileges. At all times, students are free to post questions or provide answers to other student's questions.

From time-to-time, and when possible, subject-matter-experts will visit the forum and answer a limited number of questions. However, this type of involvement should not be viewed as a student expectation; it's simply a courtesy when time and opportunity permit.

If you would like to have access to the private forums, please request access at the time of your program registration.


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Evaluation System: After completing each instructional topic, the student can access the related *Topic Knowledge Exam* at www.mindprotesting.com. Minimum score for each Topic Knowledge Exam is 70%, where the student is provided 3 attempts for each exam.

After successfully completing all of the Topic Knowledge Exams, the student is then officially recognized as *Green Belt - Industrial Program Qualified*. The related certificate is granted and signed by Dr. Mikel J. Harry.

Upon successful program qualification, the candidate may proceed to the *Digital Project Exam*. This particular exam is included in the Green Belt exam but does require access to MindPro. Minimum score for the Digital Project Exam is 70%, where the student is provided 3 attempts.

After successfully completing the Digital Project Exam, the student is officially recognized as *Green Belt - Industrial Project Qualified*. The related certificate is granted and signed by Dr. Mikel J. Harry.


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Proficiency Certification: The topic level exams are required for Green Belt - Industrial Program Qualification. The Digital Project Exam is required for Project Qualification. Thus, Proficiency Certification = Program Qualification + Project Qualification. MindPro access is required for Project Qualification and Proficiency Certification.


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Project Criteria: The student may elect to extend their learning and application experience beyond the academic world. This can be accomplished by completing an on-the-job value-based project. Completion of at least one such project is essential to become *Project Certified*. The student must be sponsored by a business enterprise or institution to participate in this level of certification.

Lean Six Sigma application projects are identified, assigned, administered and approved by the student's sponsoring organization. While the Six Sigma Management Institute certifies the student's academic proficiency, only the sponsoring organization can attest to the student's demonstrated ability to apply that body of knowledge within the real-word; in a meaningful and successful way.

Once the student has satisfied the sponsoring organization's project success criteria, the management of that organization often formally recognizes this achievement by certifying the related project. This means that the student's

project produced a measurable and verifiable value-based benefit that satisfied the originating business goal.

Once the project criteria have been fully satisfied, the student may then declare a *de facto Professional Certification*; i.e., Professional Certification = Proficiency Certification + Project Certification.


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Analytical Software:

Although Minitab is not required to successfully complete any MindPro® program, the student should be aware that this particular analytical platform (as well as Excel) is used as the primary foundation for demonstrating many of the key tools and concepts described in the MindPro™ Lean Six Sigma Body-Of-Knowledge (LSS-BOK).

In other words, Minitab and Excel were used to make all of the Application Videos associated with the MindPro™ Black Belt, Green Belt and Yellow Belt training and certification programs (see Instructional Methods).


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Reference Books:

The following resources are highly recommended for the Green Belt - Industrial Program of Study. Although not required, the student will find these books most helpful as a *source reference* during the course of training.

Harry, M. J., Linseemann, D. (2005) *The Six Sigma Fieldbook: How to Successfully Implement the Six Sigma Breakthrough Management Strategy*. Doubleday, Random House Inc., New York

Harry, M. J., Schroeder R. (1999) *Six Sigma: The Breakthrough Management Strategy Revolutionizing the World's Top Corporations*. Doubleday, Random House Inc., New York

Pyzdek T. (2001) *The Six Sigma Handbook: A Complete Guide for Greenbelts, Blackbelts, & Managers at All Levels*. McGraw-Hill, New York


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Program Testimonials:

It is often the case that previous students and respected authorities seek to highlight and share their personal training experiences with others. To this end, the prospective MindPro® student is encouraged to read what others have had to say about Dr. Harry and the power of Lean Six Sigma.


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Program Citations:

MindPro® was made possible through the asserted efforts and kind contributions of many people and organizations. The listing of key contributors credits their guidance, discussions, work, materials, copyrights, publications, presentations, and ideas. Thanks to such contributors, the benefits of Six Sigma as well as other process improvement initiatives can now be realized by large, medium, and small organizations, as well as individuals seeking professional advancement and recognition through digital learning, coaching and development:


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SSMI Profile:

The Dr. Mikel J. Harry Six Sigma Management Institute (SSMI) is the world's leading innovator of Six Sigma methodologies, specializing in the research and development of Lean Six Sigma and process improvement training curriculums, delivery systems, supporting tools and resources. By combining Dr. Harry's 20-plus years of experience in the field of Six Sigma along with new technologies, SSMI is able to deliver expert knowledge at a fraction of traditional costs. The SSMI website can be accessed at the following address: www.ss-mi.com.

Academic Integrity: The faculty and staff of the Six Sigma Management Institute fully support the concepts and conventions related to academic integrity. At all times, students are expected to perform their own work in an original way.

- Having a tutor or colleague complete a student's assignments is unacceptable.
- Having a reviewer make extensive revisions to an assignment or participate during the course of examinations is unacceptable.

- Use work previously submitted by another student or author is unacceptable.

- Using other's information without proper citation or expressed permission is unacceptable.

Should a student choose to violate these basic expectations, the result will be program expulsion. This means that further access to MindPro® will be immediately terminated, pending notification and appeal.

If the violation is discovered following completion of the student's training program, then any qualification letters or proficiency certificates that were previously granted by SSMI will be immediately recanted, pending notification and appeal.

At the discretion of SSMI, work accomplished in the any program of study is subject to verification of originality.

License Agreement: The MindPro™ delivery system and programming code, as well as the related instructional content, videos, and documents, are the intellectual property of Dr. Mikel J. Harry, Ltd. This property has been licensed to SSMI under a separate reseller's agreement.

All single-user students will be bound by the terms of the End User License Agreement (EULA), available for review at the MindPro site at <http://www.mindproweb.com/terms.php>. SSMI strongly encourages each student to read this agreement as purchase or use of the MindPro system is your acceptance of this agreement. However, in accordance with our *Total Customer Satisfaction* policy, SSMI will allow a student up to 48 hours after registration to decline these terms and request a refund.

Under the terms of this agreement, the student must request permission (in writing) to copy, reproduce, or otherwise use any of the material or content contained within the MindPro™ system for resale or any other secondary use. All requests must be directed to Dr. Mikel J. Harry, Ltd. in care of SSMI at info@ss-mi.com.

Program Registration: To register for any MindPro® training program please call toll free 800-335-6234 or direct 480-515-0890. All program registration fees must be paid at the time of registration. Upon registration, the student will be provided with the information and instructions for how to access the MindPro® system and programs.

Refund Policy: The Six Sigma Management Institute (SSMI) supports and sustains a *Total Customer Satisfaction* policy. This means that SSMI stands behind its training programs (and delivery systems) in terms of product quality, reliability, availability and technical support.

If within 48 hours of system activation, a MindPro® customer (i.e., student) decides not to pursue the selected program of study, and requests a full refund (for any reason), SSMI will promptly cancel the transaction without discourse, return all monies related to that transaction (to the purchaser) and do so in the most expeditious manner possible. E-mail: info@ss-mi.com .

System Requirements: The minimum system requirements for all of the MindPro™ Lean Six Sigma programs of study are as follows:

- Pentium processor-based PC or compatible computer
- 128MB of RAM (256MB recommended)
- High-Speed Internet Connection
- Cookies, JavaScript and ActiveX must be enabled in your browser's security settings.
- Adobe Reader
- QuickTime Media Player

Although not required, the following software is strongly recommended:

- Microsoft Excel 2000 or later
- Minitab V13 or higher

Technical Support: Students can receive technical assistance through the following channels:

- E-mail: support@ss-mi.com
- Toll Free: 800 335-6234
- Direct: 480 515-0890

Revision Policy: In the spirit of continuous improvement, SSMI reserves the right to make changes, modifications or updates to any or all of the MindPro™ delivery system components, at any time it deems necessary. Such changes will be made at the sole discretion of SSMI. Furthermore, SSMI will make every reasonable effort to notify current users of such changes prior to enabling the related functionality.