



# Six Sigma Courses

*Offered in Partnership  
With  
International Quality Federation (IQF)*

*Open to all educational and professional disciplines*

- **Green Belt and Black Belt Certification**
- **9.00 Credit Hours towards Masters in Engineering Management (MEM) Program\***
- **9.00 Credit Hours towards Master of Science in Product Development (MPD) Program\*\***

*\*For those already registered / meet requirements for admission to the MEM Program.*

*\*\*For those already registered / meet requirements for admission to the MPD Program.  
MPD Program starts only once every year. The next cohort starts on January 5, 2009.*

# Six Sigma

In the current competitive business environment, industries are striving to improve efficiencies by increasing productivity, enhancing products and services while reducing costs. Lean Six Sigma has emerged as the leading initiative in industry today that enables many managers to achieve these goals. Lean Six Sigma has been widely deployed in a variety of industries including Manufacturing, Medical, Banking, Insurance, Pharmaceutical, Automotive, Aerospace and many more in manufacturing operations as well as service / business / transactional processes. The Lean Six Sigma strategy combines effective problem solving methodologies, modern quality thinking, process flow analysis and data analysis techniques to help companies solve problems that affect profitability by addressing quality, cost, timing and customer satisfaction. Key positions within a Lean Six Sigma deployment are Green Belt and Black Belt project leaders. These change agents serve as problem solving team leaders and drive the projects necessary to transcend any organization's key performance measurables.

University of Detroit Mercy (UDM) has partnered with the International Quality Federation (IQF) to offer a comprehensive Black and Green Belt Certification program. This program includes a series of 'for credit' courses in the Green Belt skill set, Black Belt skill set as well as a class that helps students prepare for the rigorous Six Sigma certification exam and mentors them through an actual industry project.

The series of courses leverage the best of an academic and continuous professional development effort to prepare the students for a challenging industry position as a Black Belt or Green Belt in any organization.

*Additionally, those qualified for admission to the university's Masters in Engineering Management (MEM Program) or the Master of Science in Product Development (MPD) Program earn 9.00 credit hours towards their program. They earn the degree and the certification at the same time.*

## **EM546 / MPD546: Product and Process Improvement Using Lean Six Sigma – Level 1 (Green Belt course)**

This course focuses on the practical application of many process flow, quality and data analysis techniques to solve many of the problems that plague organizations today. Focus will be on countermeasures developed primarily through the application of lean techniques as well as basic to intermediate qualitative and quantitative statistical techniques utilized within the Six Sigma DMAIC (Define-Measure-Analyze-Improve- Control) roadmap. This course provides the training basis for achieving the skill level of a Six Sigma Green Belt. This course serves as an introduction to Lean Six Sigma and is the first course in a series of three culminating in a Lean Six Sigma Black Belt Certification jointly backed by the University of Detroit Mercy and the International Quality Federation.

## **EM547 / MPD547: Product and Process Improvement Using Lean Six Sigma – Level 2 (Black Belt Course)**

This course focuses on the practical application of many advanced quality and data analysis techniques to solve the chronic problems that plague organizations today. Focus will be on countermeasures developed primarily through the application of intermediate to advanced statistical techniques including regression analysis, ANOVA analysis and experimental design utilized within the Six Sigma DMAIC (Define-Measure-Analyze-Improve- Control) roadmap. This course provides the training basis for achieving the skill level of a Six Sigma Black Belt. This course serves as a continuation to Lean Six Sigma tool set and is the second course in a series of three preparing the student for a Lean Six Sigma Black Belt Certification examination jointly backed by the University of Detroit Mercy and the International Quality Federation.

## **EM548 : Product and Process Improvement Using Lean Six Sigma – Level 3 (Certification Special Studies Course)**

This course serves as special studies, capstone course. The focus is on the practical application of the Lean Six Sigma toolset within an actual Lean Six Sigma project to solve a problem within the student's organization. The student will be coached through the project process and Six Sigma roadmap thru a project sponsored by the student's employer. If a project is not available through the student's employer, the instructor will assist the student in finding another project. The class also provides the opportunity for each student to take the International Quality Federation Black Belt examination. The completion of the project and passing the exam is a requirement for Black Belt certification. The class meets the first week of each term to get the students kicked off on the project process as well to layout the expectations for the exam. The class also meets the last week of the term for final project presentations. During the term the student will interact with the instructor as required to coach them through the project. This course serves as the final step prior to taking the International Quality Federation examination in Lean Six Sigma Black Belt Certification jointly backed by the University of Detroit Mercy and the International Quality Federation. *For MEM students and all non- MPD students*

## **MPD 599 : Capstone / Thesis Research Project**

This will be the MPD thesis for those seeking certification. The thesis will have a definite emphasis on application of Six Sigma tools and techniques to a topic relevant to product development. The students will be working with both their MPD thesis advisor and the Six Sigma faculty. The thesis work being more extensive than the project work required for the MEM and other certification students may require more than one term of effort. The completion of thesis serves as the final step prior to taking the International Quality Federation examination in Lean Six Sigma Black Belt Certification jointly backed by the University of Detroit Mercy and the International Quality Federation. *For MPD students only*

## Minimum Requirements for Participation

### For Certification

Bachelors Degree

Participants should have working knowledge of:

- Descriptive statistics (mean, standard deviation, etc.)
- Basic graphical analysis (scatter plot, histogram, pareto)
- Basic linear regression / correlation (fitting a line)
- Basic Microsoft Excel (and/or statistical software) skills

### For Certification and Earn Credits towards the Masters in Engineering Management (MEM) or the Master of Science in Product Development (MPD) Program:

Participants must already be registered / meet requirements for admission to the MEM or the MPD Program. Please refer to the MEM and MPD Program admission requirements.

## Class Registration

**MPD students use MPD numbering for registration, all others please use EM numbering for registration**

EM546 / MPD546: Product and Process Improvement Using Lean Six Sigma – Level I (Green Belt course)

EM547 / MPD 547: Product and Process Improvement Using Lean Six Sigma – Level II (Black Belt Course)

***Prerequisite: EM546 / MPD546***

EM548 / MPD599: Product and Process Improvement Using Lean Six Sigma –Level III (Certification Special Studies Course)

***Prerequisites: Green Belt Certification - EM546 / MPD546  
Black Belt Certification - EM546 / MPD546 &  
EM547 / MPD 547***

## Learn from the Leading Industry Experts

### Don Lynch and Bryan Dodson

**Don Lynch** received his BS in Mechanical Engineering from Michigan Technological University, MBA from Eastern Michigan University, Ph.D. in Mechanical (Industrial) Engineering from Colorado State University and a post Graduate Certificate in Lean Six Sigma from the University of Michigan.

His professional career includes positions in engineering, quality, design, management and consulting at Ford Motor Company, Diamond Electric Mfg., Visteon Corporation, SKF USA and The University of Michigan. He holds (6) American Society for Quality certifications including Six Sigma Black Belt (CSSBB). He is also a University of Michigan Certified Black Belt and Lean Specialist (manufacturing and office) and an International Quality Federation (IQF), Visteon Corporation and SKF Certified Master Black Belt (MBB). Don also holds certifications from the Institute for Lean Innovation as well as Kepner-Fourie in Critical Thinking. As a three-time MBB Don has completed projects, developed programs, consulted and instructed in all areas of Six Sigma and Lean including manufacturing, office, transactional, product and process design, systematic innovation as well as critical thinking. He has deployed continuous improvement programs for organizations in Japan, Europe and the U.S.. He has authored over twenty-five papers, magazine articles, journal entries and presentations on Six Sigma, Lean Continuous Improvement and other related areas. In his current position he is a Senior Lean Six Sigma Master Black Belt and Deployment Director with SKF USA. Don is also an Adjunct Professor at Cleary University in their MBA program and a guest Lecturer and Conference Leader and Consultant for the University of Michigan College of Engineering and Center for Professional Development.

**Bryan Dodson** earned a B.S. in petroleum engineering, an M.S. in industrial engineering, and an M.B.A from Louisiana Tech University and a Doctor of Business Administration from Nova Southeastern University. In addition, Bryan is a CQE, CRE and a licensed professional engineer.

Currently Design for Six Sigma Master Black Belt for SKF, Bryan Dodson has held the positions of Associate Director of Quality & Reliability Engineering with Global responsibility for Visteon, Manager of Reliability Engineering and Quality Information Systems - North America at Continental-Teves, TQM Leader and Reliability Leader at Alcoa, and the position of Industrial Engineer at Morton Thiokol. Bryan has authored eight books including: *the Reliability Engineering Handbook*, *Weibull Analysis: with Software*, *the Six Sigma Black Belt Study Guide*, *CQE Quick Reference Notes*, and *the Certified Reliability Engineer Examination Study Guide*. He has also developed several software packages including; the *Training Pro* Interactive Study Guides, the *Reliability & Maintenance Analyst*, and *Measurement Assurance*. He served as Chair of the committee that created the International Quality Federation's Six Sigma Examination. He also developed the software that delivers this state of the art exam. Dr. Dodson has published numerous articles in technical journals and teaches several courses for technical societies

and as an adjunct faculty member at universities. Dr. Dodson serves as a technical editor for Quality Engineering, and as a technical reviewer for Quality Publishing and Addison-Wesley.

### **Additional Information and Application**

For additional information and application, please contact MPD and MEM Program Office:

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