

Stevens Institute of Technology  
Howe School of Technology Management  
**MGT 656 WS Quality and Process Management**  
**Syllabus**

Spring:	Weekday: Online
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### **Overview**

This course will provide the student with the underlying principles and techniques of Quality Management with emphasis on process improvement. Topics covered include historical perspective on quality; teachings of quality “gurus”; TQM models, standards, and implementation guidelines; process management tools and applications including process mapping, statistical process control, and application of Six Sigma. Students will develop a working knowledge of the best practices in Process Management and Improvement. Students individually and in teams apply the class learning to business problems in real corporate environment.

### **Relationship of Course to Rest of Curriculum**

This course is one of the four courses in the Technology Management Certificate program. It is focused on management and improvement of business processes for increased productivity and customer satisfaction.

### **Learning Goals**

1. Explain the importance of process improvement to business success.
2. Conduct process improvement projects using Six Sigma methodology- DMAIC.
3. Apply basic statistical process control tools

## Pedagogy

This course combines lectures and readings to develop an understanding of the concepts and principles. A series of individual and team assignments, provide the student with an opportunity to demonstrate that he/she has command of the knowledge.

## Required Text(s)

Principles of Total Quality by Vincent K. Omachonu and Joel E. Ross, 3rd Edition, CRC 2004. ISBN 1574443267

## Required Readings

- ISO 9000-2000 from the Center for ISO 9000 <http://www.iso-9000-2000.org/2/4/startfrm3.htm>
- “A comparative Analysis of National and Regional Quality Awards,” Quality Progress, August 2000
- “Implementing the Six Sigma Solution,” Quality Progress,” Quality Progress, July 1999.
- “Six Sigma’s Missing Link,” Robert Gnibus, Quality Progress, November 2000.
- “How Do You Calculate a Z Score?”, <http://www.measuringusability.com/zcalc.htm>
- “Explosion of New Products Creates Challenges” Quality Progress, May 1999.
- “Theory of Inventive Problem Solving (TRIZ),” <http://www.mazur.net/triz/>
- “Using the Software CMMÒ With Good Judgment,” Mark C. Paulk, Software Engineering Institute, Carnegie Mellon University.
- “A Tutorial on Quality Function Deployment.” Terry Bahill and William Chapman, EMJ Sept. 1993.
- Concurrent Engineering: A Powerful Enabler of Supply Chain Management ,” Quality Progress, July 2001.
- “Understanding User Needs,” HBS, 9-695-069, 1995
- “What do Customers Value?” Bob Gardner. Quality Progress November 2001
- “Zero Defects: What Does It Achieve? What Does It Mean? Phillip H. Williams, <http://www.isixsigma.com>
- “Code of Ethics.” ASQ. Quality Progress September 1999
- “How Ethics Can Improve Business Success.” Dean Bottorff. Quality Progress Feb 1997
- “Business Ethics Case Studies”

## Assignments

- Individual assignments – enforces and ensures student capability in the application of

process management tools.

- Team projects – helps the students to apply class learning in a team approach to a real corporate environment
- Class Participation - enhances the learning experience. Students are expected to participate in class discussions. Active engagement in class sessions is considered an important component of the grade.

<b>Assignment</b>	<b>Grade</b>
A Team Assignment 1– Part A Submission .	100 pts. (10%) <b>Team</b>
B Team Assignment 1 – Part B Submission .	200 pts. (20%) <b>Team</b>
C Team Assignments 2 & 3 @ 50 points each	100 pts. (10%) <b>Team</b>
D Exam 1 .	150 pts. (15%) <b>Individual</b>
E Exam 2 .	200 pts. (20%) <b>Individual</b>
F Homework Questions .	150 pts. (15%) <b>Individual</b>
G Class Participation .	100 pts. (10%) <b>Individual</b>

### **Grading Logic**

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The final grade is the sum of each of the above categories.

Final Grades will be given out as follows:

**A = 899 points and above**

**B = 799 – 898**

**C = 699 – 798**

For team project each team will receive an overall grade for the quality of analysis and presentation of the project. Each student will be given the team grade for participation and presentation as a member of the team. A student grade may be adjusted down based on the team assessment survey which will be used twice during the term.

(to be provided separately)

## **2. COURSE CONTENTS –**

## Modules

**Week 1:** Overview – Evolution of management over the course of the history, principles of Scientific Management, and concept of quality. Introduce the gurus of quality movement and their contributions. Discuss the concept and drivers of TQM. Learn the TQM models prescribed by gurus Deming and Juran, and illustrate benefits of TQM.

**Week 2:** TQM Implementation – Understand the TQM standards -Review ISO 9000 standards. Understand the standards of Business Excellence – Review Deming and Malcolm Baldrige National Quality Award. Describe the key steps in implementation of TQM. Discuss the strategy for getting started with a TQM program. Review the approaches of leading companies. Review a case study.

**Week 3:** Process Management – Understand the concept of a process and the customer supplier model. Learn the steps in setting up and managing business processes. Learn how to flow chart a process and discuss the needs and approach to business Process Reengineering.

**Week 4 :** Process Management Tools - Develop a working knowledge of some of the tools in quality and process management. Will review

- Histogram
- Pareto Chart
- Cause and Effect Diagram
- Scatter Plot
- Run Chart
- Control Chart (will be covered with Six Sigma)
- Affinity Diagram
- Nominal Group Technique

**Week 5 :** Six Sigma - Understand the concept and approach to Six Sigma quality. Learn how to apply Six Sigma methodology. Learn about GE's approach and its success with Six Sigma program

**Week 6:** Quality in R&D - Discuss the importance of innovation. Learn the phases of the life cycle in product/service development. Describe TRIZ methodology for innovative solutions. Define quality in R&D and identify drivers of successful product/service introduction.

**Week 7:** Team Assignment 1- Part A - This project provides the student with a team experience on an applied problem. The problem is to apply the first two steps of the Six Sigma methodology (Define and Measure) to improving a process within the functional unit of one of

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the student's companies.

- Week 8:** Software Quality - Explore the concept of software engineering and software process management. Define the levels of SEI-CMM and the associated benefits. Identify the metrics commonly used in Software Engineering
- Week 9:** Quality Function Deployment - Understand the concept of QFD. Learn the history of QFD in Japan and US and develop a working knowledge of the House of Quality and how to apply it.
- Week 10:** Voice of the Customer /Customer Relationship Management – Discuss the importance of customer satisfaction. Understand what is involved in managing a business to satisfy customers (VOC Framework). Learn how to ensure that the Voice of the Customer is represented in critical business decisions (Family of Measures). Learn how to organize to capture, translate, and use the Voice of the Customer (VOC Process).
- Week 11:** Concurrent Engineering - Understand the concept of Concurrent Engineering and its role in cost and cycle time reduction. Familiarize with organization of CCE Teams and identify some of the tools supporting CCE
- Week 12:** Target Costing and Ethics and Quality – Explore the concept and approach to target costing. Develop an understanding of the strategy and the process in achieving target costs for new products/services. Also, understand the relationship between business ethics and Quality Management.
- Week 13:** Team Assignment 1- Part B. This project provides the student with a team experience on an applied problem. The team will complete steps 3 and 4 of the Six Sigma Methodology (Analyze and Improve) on the process identified in Part A.

## Ethical Conduct

The following statement is printed in the Stevens Graduate Catalog and applies to all students taking Stevens courses, on and off campus.

“Cheating during in-class tests or take-home examinations or homework is, of course, illegal and immoral. A Graduate Academic Evaluation Board exists to investigate academic improprieties, conduct hearings, and determine any necessary actions. The term ‘academic impropriety’ is meant to include, but is not limited to, cheating on homework, during in-class or take home examinations and plagiarism.”

Consequences of academic impropriety are severe, ranging from receiving an “F” in a course, to a warning from the Dean of the Graduate School, which becomes a part of the permanent student record, to expulsion.

*Reference: The Graduate Student Handbook, Academic Year 2003-2004 Stevens Institute of Technology, page 10.*

Consistent with the above statements, all homework exercises, tests and exams that are designated as individual assignments MUST contain the following signed statement before they can be accepted for grading.

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I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination. I further pledge that I have not copied any material from a book, article, the Internet or any other source except where I have expressly cited the source.

Signature \_\_\_\_\_

Date: \_\_\_\_\_

Please note that assignments in this class may be submitted to [www.turnitin.com](http://www.turnitin.com), a web-based anti-plagiarism system, for an evaluation of their originality.