

## Teaching Total Quality and Continuous Improvement

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### Abstract

The author discusses a novel course involving the Total Quality approach for achieving Continuous Improvement. Quality improvement in America is no longer a choice. In today's *highly competitive world*, it is a matter of economic survival. Japan and European countries have created their industrial successes by adopting Total Quality Management (TQM) to reorganize and manage their organizations. The course provides a timely perspective to students on the quality movement.

### I. Introduction

There is a broad agreement that we need to provide a timely perspective to students on the Total Quality approach for achieving Continuous Improvement. This is because quality improvement in America is no longer a choice as we live in a highly competitive world. Japan and European countries have created their industrial successes by adopting Total Quality Management (TQM) to reorganize and manage their organizations. The students will benefit immensely from an exposure to TQM tools and Continuous Improvement methodologies. This thinking led to the development of an upper-division course: **Total Quality and Continuous Improvement**. It is a three- units course and is offered every semester. It is open to all majors in the campus, as it has been recognized as a GE (General Education) course.

### II. Course Objectives

There are *three* objectives of the course as described below. Upon successful completion of the course, the student will be able:

1. To understand the TQM and Continuous Improvement concepts and their applications.
2. To apply the TQM tools and Continuous Improvement methodologies to real-life problems.
3. To appreciate the *global competitiveness* issues, such as quality, productivity, cost and customer satisfaction.

### III. Performance Criteria (PC) and Evaluation Methods

#### Objective 1:

PC 1.1 The student will demonstrate a basic knowledge of the Total Quality Management (TQM) and Continuous Improvement topics.

*(Evaluation methods: Exams, project work, class work and written exercises)*

PC 1.2 The student will demonstrate an ability to articulate and apply the TQM and Continuous Improvement concepts. *(Evaluation*

*methods: Examinations, project work, class work and written exercises)*

#### Objective 2:

PC 2.1 The student will demonstrate a basic knowledge of TQM tools and Continuous Improvement methodologies. *(Evaluation methods:*

*examinations, project work, class work and written exercises)*

PC 2.2 The student will demonstrate an ability to apply the TQM tools and Continuous Improvement methodologies to relevant problems.

*(Evaluation methods: examinations, project work and written exercises)*

#### Objective 3:

PC 3.1 The student will demonstrate a basic knowledge of global competitiveness and the relative position of USA in the area of consumer goods and services. *(Evaluation methods: examinations,*

*project work and written exercises)*

PC 3.2 The student will demonstrate an ability to analyze the factors affecting global competitiveness with reference to specific products and services. *(Evaluation methods: exams, project work and*

*written exercises)*

### IV. Major Course Topics

The course covers the following major topics:

1. History of quality movement: Contributions of Quality Gurus, such as Deming, Juran, Ishikawa and others
2. TQM Principles: Customer-driven products and services, Deming's Cycle PDCA (Plan-Do-Check-Act), Strategic Planning -- Mission, Goals and Objectives

3. Decision Making Tools: The Cause-and-Effect diagram or The Fish-Bone Diagram, Matrix Chart, Quality Function Deployment (QFD) or House of Quality, Brainstorming and Benchmarking
4. Research Tools: Modern Library Search Techniques, Hi-Tech Search using the Internet and www to facilitate the class discussions, essays and Team Projects.
5. Visual representation of data: Pie Chart, Bar Chart, Pareto Chart, X-Y plot, Scatter Diagram, Linear Regression, Data Range, Frequency Polygon, Frequency Curve, and Histogram
6. Quality and Productivity Issues: Supply Chain Management, Worker Empowerment, Teamwork, and Time Management
7. Statistical Tools: Data sampling, Frequency Distribution, Standard Deviation, and Limit Charts with examples of real-life applications
8. TQM Implementation: Successful implementation strategy, Industrial practice and Case studies
9. Quality Standards and Quality Awards: ISO 9000 Series, Malcolm Baldrige National Quality Award (MBNQA), and Deming's Prize

Students are encouraged to consult with the important literature in the field and a special collection has been compiled in the University Library for their use (see Bibliography).

#### V. Team Environment

The students enrolled in the class work in a “team environment” and they must complete Class Projects requiring written reports and oral presentations. A comprehensive list of books on TQM and related topics is available for reference reading and research by the students while doing their Team Projects.

#### VI. Student Feedback for Continuous Improvement

At the end of the semester the students participate in a discussion how to improve the course. They also complete a survey form making specific comments. Following the Deming's Continuous Improvement cycle P-D-C-A (Plan-Do-Check-Act), these comments will be analyzed about their merits and then the improvement ideas will be incorporated in the course for the next offering.

#### VII. Conclusion

The details of a course **Total Quality and Continuous Improvement** are discussed above. The students enjoy the course and surveys indicate that they found it very useful. One

innovative feature of the course includes visit by TQM experts from industry as guest speakers to offer their perspectives to students.

## VIII. Bibliography

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