

# MET-2740: QUALITY MANUFACTURING

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## Cuyahoga Community College

### Viewing: MET-2740 : Quality Manufacturing

**Board of Trustees:**

2016-03-31

**Academic Term:**

Fall 2018

**Subject Code**

MET - Mech Eng/Manuf Ind Eng Tech

**Course Number:**

2740

**Title:**

Quality Manufacturing

**Catalog Description:**

Practical application of quality principles to process improvement and reduction of variation. Application of statistical techniques and concepts used in quality control; acceptance sampling; quality cost; reliability; applications of computers, software to other quality control tools to quality improvement.

**Credit Hour(s):**

3

**Lecture Hour(s):**

3

## Requisites

**Prerequisite and Corequisite**

MET-2400 Statistical Quality Control; and MATH-1 530 College Algebra, or departmental approval: work experience.

## Outcomes

**Course Outcome(s):**

Apply quality principles to process improvement and reduction of variation.

**Essential Learning Outcome Mapping:**

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

**Objective(s):**

1. Analyze the principles and practices of Total Quality Management (TQM).
2. Examine the evolution of quality and continuous improvement concepts.
3. Assess quality and ethics.
4. Apply problem solving to quality improvement.
5. Distinguish and evaluate the various quality systems.
6. Evaluate the requirements of ISO 9000 and ISO 14000.
7. Explain supplier certification requirements: QS 9000 and TS 16949.
8. Discuss the Malcom Baldrige National Quality Award.
9. Define Six Sigma.

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**Course Outcome(s):**

Apply statistical techniques and concepts used in quality control including acceptance sampling, quality cost, reliability, and application computers, software to other quality control tools to achieve quality improvement.

**Essential Learning Outcome Mapping:**

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Written Communication: Demonstrate effective written communication for an intended audience that follows genre/disciplinary conventions that reflect clarity, organization, and editing skills.

**Objective(s):**

1. Explain and apply the statistical tools and techniques of TQM.
  2. Demonstrate the use of tools of Statistical Quality Control..
  3. Assess Statistical Process Control concepts to improve process quality.
  4. Compare and contrast quality costs
  5. Evaluate the various types of quality costs.
  6. Calculate and appraise quality costs for decision making.
  7. Explain and apply acceptance sampling systems.
  8. Apply software to evaluate and implement quality control plans.
  9. Assess various methods used to control quality such as design of experiments, quality function deployment and quality audits.
  10. Explain the evolution of product liability.
  11. Apply the basic concepts of benchmarking and auditing in quality control.
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**Methods of Evaluation:**

1. Quizzes and assignments
2. Final examination
3. Capstone Project

**Course Content Outline:**

1. Setting the Stage
    - a. Quality basics
    - b. Quality advocates
    - c. Quality improvement: problem solving
  2. Control Charts for Variables
    - a. Statistics
    - b. Control charts and process capability
  3. Control Charts for Attributes
    - a. Probability
    - b. Control charts for attributes
  4. Expanding the Scope of Quality
    - a. Reliability
    - b. Pareto analysis
    - c. Fishbone analysis
    - d. Design of experiments
    - e. Quality audits
    - f. Quality costs
    - g. Quality function deployment
    - h. Benchmarking
    - i. Continuous process improvement
  5. Introduction to ISO9000, ISO 14000, QS 9000, TS 16949
  6. Introduction to Six Sigma and the Malcom Baldrige Award.
  7. Introduction to military quality standards and acceptance sampling systems.
  8. Product Liability
    - a. Evolution of product liability
    - b. Warranties
  9. Introduction to Reliability
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**Resources**

Besterfield, Dale. *Quality Control*. 8th Ed. Upper Saddle River, NJ., 2009.

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Krishnamoorthi, K.S. *First Course in Quality Engineering*. Upper Saddle River, NJ., 2006.

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Griffith. *Quality Technician's Handbook*. 6th Ed. Upper Saddle River, NJ., 2013.

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Smith, Gerald. *Statistical Process Control and Quality Improvement*. 5th Ed. Upper Saddle River, NJ., 2004.

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Summers, Donna C. S. *Quality*. 5th Ed. Upper Saddle River, NJ., 2010.

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**Resources Other**

1. Handouts
2. Application Software

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