#### DEPARTMENT OF INDUSTRIAL AND ENGINEERING TECHNOLOGY

Course Number: IET 587/687 Credit Hours: 3

I. Title: Quality Control

- II. Catalog Description: Examines the various aspects of quality control from the viewpoint that product and service quality requires managerial, technological and statistical concepts throughout all the major functions in an organization.
- III. Purpose: To provide the students exposure to the management and engineering methods and techniques being used in modern companies to accomplish international levels of quality.

## IV. Course Objectives:

A. Provide a general understanding for the need for continuous quality improvement as part of the culture of any business or organization.

- B. Provide specific background in:
  - 1. Use of basic statistics to quantify quality
  - 2. Cost of quality
  - 3. Use of Statistical Process Control

#### V. Content Outline:

- A. Definitions of Quality
  - 1. Design
  - 2. Conformance
  - 3. Performance
  - 4. Taguchi
  - 5. Deming's view of quality vs productivity
  - 6. Balancing costs, conformance, performance and design quality
  - 7. Design for Manufacture, and Design from Marketing
- B. Systems Approach to Company Wide Quality
  - 1. Deming's 14 points
  - 2. Documenting and defining a process
  - 3. Certification (ISO 9000, Malcom Baldridge Award)

## C. Quantifying Quality

- 1. The normal distribution
- 2. Visually describing data
- 3. Engineering specifications
- 4. Basic statistics
- 5. Basic Probability
- 6. The loss function

# D. Methods for systematically improving quality

- 1. The Deming Cycle
- 2. Variation (Special and Common Causes)
- 3. SPC Control Charts (Attribute and Variables)
- 4. Out of Control Patterns on Control Charts
- 5. Use of common Capability Indices

### E. Instructional Activities

- 1. Lecture
- 2. Class Discussion
- 3. Group Interaction
- 4. Written Reports
- 5. Homework
- 6. Video Tapes of Corporate Quality Improvement Projects

# VII. Field and Clinical Experiences

NA

### VIII. Resources

- A. Text
- B. Z Value calculations and tables from other texts
- C. Newer Capability Indices from current journals

## IX. Grading Procedures

- A. Evaluation
- 1. 2 Exams (45% each)
- 2. Homework Projects and Class Participation (10%)

Note to Graduate Students: Students taking this course for graduate credit will be provided with additional assignments. These assignments will be part of the Homework and Projects grade.

## B. Late Assignments

Late assignments will not be accepted.

Make - up exams may or may not be given at the discretion of the instructor.

### X. Attendance Policy

Attendance is expected.

#### XI. Academic Honesty Policy:

Cheating, plagiarism, submitting another person's material as one's own or doing work for another person which will receive academic credit are all impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure or give help during an examination, the unauthorized copying of examinations, assignments, reports, or term papers, laboratory reports, drawings or the presentation of unacknowledged material as if it were the student's own work. Disciplinary action may result in failure of the course.

#### XII. Required Text

### **Quality Inspired Management, (Prentice Hall /Pearson)**

by C. Harold Aikens, ISBN10: 0-13-119756-8

### XIII. Prerequisites

CIS 243, equivalent statistics background or consent of instructor.

XIV. Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or other provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities.

The instructor reserves the right to adjust the content of the course during the semester.

W. Palmer 1/2011