SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: MECH-327 Department: MET

Course Title: Quality Concepts Semester: Spring Year: 2003

Course Objective	Competencies
1. The purpose of this course is to provide the student with the fundamental knowledge of current quality applications in use today for manufacturing organizations to remain competitive.	• The student will define the different types of quality organization as centralized, decentralized, or matrix organization. • The student will define the role and responsibility of a quality engineer. • The student will define Quality terms, concepts and principles.
2. Quality benefits, philosophies, and models will be discussed.	• Key theories of Shewhart, Deming, Juran, Crosby, Feigenbaum, and Ishikawa with respect to their philosophies and implementation strategies will be compared with the Baldrige and ISO 9000 models of implementation. • The student will be able to distinguish between Deming's System of Profound Knowledge, Juran's Quality Trilogy, and Crosby's Absolute of Management.
3. Different models of implementation such as ISO 9000, QS 9000, and the Malcolm Baldrige Quality Award will be studied.	• The student will define the current Baldrige criteria and evaluate the points allotted to each criterion. • The student will define the components of ISO 9000 standards. • The student will review a Quality Manual using the ISO 9000 standards.

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4. Continuous Improvement techniques will be investigated. The elements covered will be Human resources, Inspection and testing, NCM cycle, Auditing, Cost of Quality, and Statistical Process Control.	• The student will review and generate the 7 basic quality improvement tools: Flowcharts, Histograms, Checklists, Control Charts, Pareto charts, Cause and Effect diagrams, and Scatter diagrams. • The student will compare and contrast Maslow's hierarchy of needs, McGregor's Theory X Theory Y, Herzberg's Motivational theory, and Alderfer's ERG theory. • The student will identify the different types of inspection as source inspection, receiving inspection, in-process inspection, and final inspection. • The student will define the difference between the types of quality audits performed: System audit, Process Audit, and Product Audit. • The student will develop cost of quality measurements of Prevention, Appraisal, Internal Failure, and External Failure for a manufacturing organization. • The student will calculate the statistical measures of mean, median, mode, range, and standard deviation for a set of numbers. • The student will construct an analyze Xbar-R chart, median-R chart, Xbar-S chart, individual-MR chart by calculating the correct plotted value, the upper control limits and lower control limits. • The student will identify the application for the four types of attribute charts: p, np, c, and u charts. • The student will interpret process capability by calculating Cp and Cpk values for a charted process.

Course Objective	Competencies
5. Computer applications in statistical methods and cost of quality concepts using Microsoft Excel software, are designed to demonstrate key principles discussed in lecture.	• The student will demonstrate basic Excel capabilities by completing several laboratory assignments. • The student will develop a Prioritization matrix in Excel to evaluate a group of suppliers based on cost, quality, and delivery. • The student will create a spreadsheet that evaluates a budget report for the different cost of quality categories and generate appropriate graphs and charts. • The student will create spreadsheets that develop Xbar and R charts, Pareto diagrams, and Histograms.