PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

QUALITY IMPROVEMENT
MGT 2160

Class Hours: 3.0 Credit Hours: 3.0
Laboratory Hours: 0.0 Date Revised: Fall 00

NOTE: This course is not designed for transfer credit.

Catalog Course Description:

This course is an introduction to quality management as a system through the application of statistical process control, W. Edwards Deming's management philosophy, and various quality management techniques.

Entry Level Standards:

The beginning student should be proficient in algebraic reasoning and calculation. The student should be proficient with a calculator, especially the statistical section. The student should be able to read and write at the college level. Most importantly, the student should be able to reason logically.

Prerequisite:

MATH 1010

Corequisite:

MATH 1530

Textbook(s) and Other Reference Materials Basic to the Course:

Textbook:

Reference Book:
Formats for Business Documents

Calculator:
A calculator with a statistical section is required for the course.

Other Materials:
Videotapes from many sources will be used in class. The instructor will assign outside of class, auxiliary reading material appropriate to the course.

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>1-4</td>
<td>Course Introduction: Total Quality, Team Management, Deming's 14 Points of Management, History of Quality Control, Present Quality &amp; SPC Applications, Costs of Quality, Quality, Productivity, and World Markets, Malcolm Baldrige National Quality Award, Deming Prize, Benchmarking, Other</td>
</tr>
</tbody>
</table>
Documenting and Diagnosing a Process: Flowcharts, Operational Definitions, Cause and Effect Diagrams, Check Sheets, Pareto Analysis
Basic Statistics: Frequency Distributions, Histograms, Run Charts, Measures of Central Tendency, Measures of Variability, Measures of Shape

Stabilizing and Improving a Process Using Control Charts: The Plan, Do, Study, Act Cycle, Variation, Rational Subgrouping, Out of Control Signals & Patterns; Attribute Control Charts: P Charts, nP Charts, C Charts, U Charts; Variables Control Charts: X-Bar and R Charts, X-Bar and S Charts, Individuals Charts; Process Capability: Introduction to Specifications, Introduction to Taguchi loss function

II. Course Objectives*:

A. Demonstrate an adequate knowledge of W. Edwards Deming's quality concepts. I, II, III, VIII
B. Demonstrate an adequate knowledge of quality control history and current events. I, II
C. Demonstrate an adequate quality control vocabulary. I, II, III
D. Demonstrate an adequate knowledge of quality control evaluative methods. I, II, III

*Roman numerals after course objectives reference goals of the Management program.

III. Instructional Processes*:

Students will:

1. Practice elements of the work ethic such as professionalism, preparedness, punctuality, honesty, cooperation, dependability, contribution, effectiveness, good manners, etc. Personal Development Outcome, Cultural Diversity & Social Adaptation Outcome, Transitional Strategy

2. Calculate homework problems, case studies, etc. using computer software and/or a calculator. Problem Solving & Decision Making Outcome, Technological Literacy Outcome, Numerical Literacy Outcome, Active Learning Strategy

3. Research and write a report on an organization's Quality Improvement program. Communication Outcome, Problem Solving & Decision Making Outcome, Information Literacy Outcome, Transitional Strategy, Active Learning Strategy

*Strategies and outcomes listed after instructional processes reference Pellissippi State's goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

Upon successful completion of this course, the student should be able to:

1. Explain how statistical process control fits in to the quality management system. A, B

2. Interpret the relationship between quality/productivity and world market competitiveness. B

3. Evaluate the cost of quality. A, B, C
4. Describe and analyze W. Edwards Deming's 14 points of management and his quality management philosophy.  A, C

5. Summarize the history of quality control.  A, B, C

6. Summarize the history of team management.  A, B, C

7. Evaluate team management.  A, B, C

8. Describe current events in the quality management field.  A, B, C

9. Compute and/or construct, analyze, and apply the following evaluative methods:  C, D
   a. Flowcharts
   b. Operational Definitions
   c. Cause and Effect Diagrams
   d. Check Sheets
   e. Pareto Diagrams
   f. Histograms
   g. Run Charts
   h. Process mean, range, and standard deviation
   I. P, nP, C, and V attribute control charts
   j. X-BAR and R and X-BAR and S variables control charts
   k. Individuals control charts

10. Explain the difference between common and special causes of variation.  C, D

11. Describe the Plan, Do, Study, Act continuous improvement cycle.  A, C, D

12. Evaluate rational subgrouping schemes.  C, D

13. Identify and evaluate process state of control.  C, D

14. Contrast specifications and control limits.  C, D

15. Evaluate process capability.  C, D

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Testing Procedures:

   Students are evaluated primarily on the basis of tests.  A minimum of 3 major tests is recommended.

B. Laboratory Expectations:

   N/A

C. Field Work:

   N/A

D. Other Evaluation Methods:

   Class participation, group work, and homework will also comprise the final grade for the course.  Each instructor must provide full details the first week of class via a syllabus
supplement.

E. Grading Scale:

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>92 - 100</td>
<td>A</td>
</tr>
<tr>
<td>89 - 91</td>
<td>B+</td>
</tr>
<tr>
<td>82 - 88</td>
<td>B</td>
</tr>
<tr>
<td>79 - 81</td>
<td>C+</td>
</tr>
<tr>
<td>72 - 78</td>
<td>C</td>
</tr>
<tr>
<td>65 - 71</td>
<td>D</td>
</tr>
<tr>
<td>Below 65</td>
<td>F</td>
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VI. Policies:

Attendance Policy:

Pellissippi State Technical Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course.