Course Outcome Summary

MONROE COUNTY COMMUNITY COLLEGE

QSTC 115 (Statistical Process Control)

Course Information

Division	ASET
Contact Hours	45
Theory	45
Lab Hours	0
Total Credits	3

Prerequisites   **MATH 119 required. Math 124 or 151 or higher highly recommended.**

Course Description

This course focuses on the basic concept of variation, sampling methodology and basic six-sigma improvement tools including control charting, significance testing, process capability and design of experiments (DOE). Techniques used are relevant to manufacturing and service environments.

This course is a required course for students pursuing an AAS in the Metrology/Quality program.

Program Outcomes Addressed by this Course:

Upon successful completion of this course, students should be able to meet the program outcomes listed below:

A. Collect quality related data; then interpret measurement output and graphic data by use of SPC tools and the performance of Cp and Cpk analysis.

B. Summarize calibration results, and quality concepts, then communicate these to engineering customers and others.

C. Acquire and analyze measurement and other data using appropriate statistical methods to facilitate process analysis and improvement.

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Course Outcomes

In order to evidence success in this course, the students will be able to:

1. Demonstrate an understanding of CPk and Cp analysis to determine whether a process is capable of performing to requirements.

Program outcomes linked:

    D. Collect quality related data; then interpret measurement output and graphic data by use of SPC tools and the performance of Cp and Cpk analysis.

2. Demonstrate an ability to create and interpret control charts for a working system, then via use of the charts determine whether a system is in control, or out of control. Also demonstrate an understanding of upper and lower control limits.

Program outcomes linked:

    E. Collect quality related data; then interpret measurement output and graphic data by use of SPC tools and the performance of Cp and Cpk analysis.

    F. Summarize calibration results, and quality concepts, then communicate these to engineering customers and others.

3. Define the use of statistics in a process and production environment, and how these provide data to determine the levels of quality of the products that are produced.

Program outcomes linked:

    G. Collect quality related data; then interpret measurement output and graphic data by use of SPC tools and the performance of Cp and Cpk analysis.

    H. Acquire and analyze measurement and other data using appropriate statistical methods to facilitate process analysis and improvement.

4. Provide detailed descriptions of data used to determine whether a process is in control or out of control; utilize sigma level designations and control limits when providing this description.

Program outcomes linked:

    I. Collect quality related data; then interpret measurement output and graphic data by use of SPC tools and the performance of Cp and Cpk analysis.

    J. Acquire and analyze measurement and other data using appropriate statistical methods to facilitate process analysis and improvement.

5. Explain how quality tools, such as Pareto charts, histograms, scattergrams, and fish bone charts, are used to describe a production system's quality level, stability, and ability to produce products that meet required quality levels.

Program outcomes linked:

    K. Collect quality related data; then interpret measurement output and graphic data by use of SPC tools and the performance of Cp and Cpk analysis.

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L. Acquire and analyze measurement and other data using appropriate statistical methods to facilitate process analysis and improvement.

M. Summarize calibration results, and quality concepts, then communicate these to engineering customers and others.

6. Explain how standards (or requirements) are determined for a production system, and how the average number of defects is used to determine whether a production system is performing to specifications.

Program outcomes linked:

N. Collect quality related data; then interpret measurement output and graphic data by use of SPC tools and the performance of Cp and Cpk analysis.

O. Acquire and analyze measurement and other data using appropriate statistical methods to facilitate process analysis and improvement.

P. Summarize calibration results, and quality concepts, then communicate these to engineering customers and others.

7. Descriptions and Basic Understanding of central tendency, mean median, and mode, sample and population standard deviations, probability, permutations, combinations and various other statistical concepts.

Program outcomes linked:

Q. Collect quality related data; then interpret measurement output and graphic data by use of SPC tools and the performance of Cp and Cpk analysis.

R. Acquire and analyze measurement and other data using appropriate statistical methods to facilitate process analysis and improvement.

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