Sinclair Community College
444 E. Third St.
Dayton, OH 45402

Master Syllabus

OPT 2201 - Statistical Process Control

Division: Science, Mathematics and Engineering

Department: Operations Technology

Credit Hour Total: 3.0 **Lecture Hrs:** 2.0 **Lab Hrs:** 2.0

Prerequisite(s): OPT 1101 AND OPT 1198

Date Revised: October 2012

Course Description:

Emphasis on process capability, control charts, techniques and analysis. This is followed by more advanced study of reliability, quality function deployment, design of experiments, failure mode effects analysis and quality costs. Two classroom, two lab hours per week.

General Education Outcomes:

- Oral Communication
- Written Communication
- Critical Thinking/Problem Solving
- Values/Citizenship/Community
- Computer Literacy
- Information Literacy

Course Outcomes:

Reliability Testing, Evaluation & Prediction
Apply the laws of reliability to test, determine, evaluate and predict the reliability of systems and components and devise ways for reliability improvement.

Assessment Method: Locally developed exams
Performance Criteria: Correctly Answer 70% of Exam Questions

Advanced Topics in Quality
Apply techniques such as Quality Function Deployment, Design of Experiments, Failure Mode and Effects Analysis, and Quality Costs to further analyze and suggest improvements to existing and proposed systems.

Assessment Method: Locally developed exams
Performance Criteria: Correctly Answer 70% of Exam Questions

Hypothesis Testing & Factorial Designs
Apply hypothesis testing to verify differences in means, variance and standard deviation of data from designed experiments.

Assessment Method: Locally developed exams
Performance Criteria: Correctly Answer 70% of Exam Questions

Forms of Variability & Process Dominance
Select appropriate techniques used to control and reduce variation.

Assessment Method: Locally developed exams
Performance Criteria: Correctly Answer 70% of Exam Questions

Measurement Systems Analysis
Apply the concepts of Measurement Systems Analysis and select appropriate techniques used to evaluate, control and reduce variation.Apply the concepts of Measurement Systems Analysis and select appropriate techniques used to evaluate, control and reduce variation.

Assessment Method: Locally developed exams
Performance Criteria: Correctly Answer 70% of Exam Questions

Data Collection, Analysis & Interpretation
Acquire, analyze and interpret data from a process to determine if that process data is normally distributed, is in statistical control and capable of meeting customer requirements; and interpret data collected from experimental designs for hypothesis testing.

Assessment Method: Locally developed exams
Performance Criteria: Correctly Answer 70% of Exam Questions

Problem Solving Techniques
Apply problem solving techniques to the development of an improvement plan for processes that are not in statistical control and/or not capable of meeting customer requirements.

Assessment Method: Locally developed exams
Performance Criteria: Correctly Answer 70% of Exam Questions

Outline:

Descriptive Statistics and Histograms
Measurement Systems Analysis
Normal Distribution & Calculations
Variable and Attribute Control Charts

Process Capability
Probability
Reliability
Quality Function Deployment
Design of Experiments
Failure Mode Effects Analysis
Quality Costs