

PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS

STATISTICAL PROCESS CONTROL
MET 2820

Lecture/Lab Hours: 3

Credit Hours: 4

Date Revised: Spring 2017

Catalog Course Description

A study of the fundamental concepts and methodology of statistical process control (SPC), with particular emphasis placed on laboratory projects to enhance hands-on operational experience. Topics include philosophy of SPC and other quality systems, basic statistical concepts, variable and attribute charting, and computer-assisted methods.

Prerequisites

MET 2810

Co-requisites

None

Textbooks and Other Supplies

Textbook: Quality Control: Besterfield, Prentice-Hall, 7TH Edition, 2003.

The Quality Technician's Handbook: Griffith, Prentice-Hall, Latest Edition

References: Gage Calibration Reference Manual: Current Edition, L.S. Starrett Company.

SPC Plus II Reference Manual: Current Edition, L.S. Starrett Company.

DataMyte Handbook: Current Edition, DataMyte Corporation

Quality: Summers, Prentice-Hall, 1997

Week/Topic Basis

Week	Topic
1	Introduction & Philosophy
2-3	Basic Statistical Concepts
4-6	Control Charts for Variables
7-8	Process Capability

9-10	Control Charts for Attributes
11-14	Culminating Experience
15	Final Exam, Final Project, or Presentation

Engineering Technology General Outcomes (Educational objectives)

- I. Apply basic engineering theories and concepts creatively to analyze and solve technical problems.
- II. Utilize with a high degree of knowledge and skill equipment, instruments, software, and technical reference materials currently used in industry.
- III. Communicate effectively using developed writing, speaking, and graphics skills.
- IV. Assimilate and practice the concepts and principles of working in a team environment.
- V. Obtain employment within the discipline or matriculate to a four year program in engineering or industrial technology.

Engineering Technology Concentration Competencies

NOTE: At the program level all 6 competencies apply to roman numerals I – V of the Engineering Technology General Outcomes (Educational objectives) listed above.

Students will

- A. Apply the knowledge, techniques, skills, and modern tools for the concentration of study to specifically defined engineering technology activities.
- B. Demonstrate the knowledge of mathematics, science, engineering and technology to engineering technology problems using developed practical knowledge.
- C. Conduct and report the results of standard tests and measurements, and conduct, analyze and interpret experiment or project results.
- D. Function effectively as a member of a technical team.
- E. Identify, analyze and solve specifically defined engineering technology-based problems.
- F. Employ written, oral and visual communication in a technical environment.

Course Goals

NOTE: Capital letters after course goals reference goals of the Engineering Technology Program.

The course will

1. Demonstrate their understanding of the basic philosophy and principles of SPC. (A-C)
2. Demonstrate their understanding of basic statistical concepts. (A-C)
3. Set-up, initiate, and analyze a gage capability study by computer-assisted methods. (A-C, D)
4. Set-up and initiate a variable control process by computer-assisted methods. (A-C, D)

5. Set-up and initiate an attribute control process by computer-assisted methods. (A-C, D)
6. Collect data and analyze results. (D)
7. Communicate technical information. (F)

Expected Student Learning Outcomes

NOTE: Numbers after Expected Student Learning Outcomes reference the course goals listed above.

The student will

- a. Define, explain, and associate the terminology used in SPC. 1
- b. Apply and associate the principles of SPC. 1
- c. Calculate mean, median, mode, range, and standard deviation. 2
- d. Create a frequency distribution chart and histogram. 2
- e. Analyze a histogram for skewness, kurtosis, and normal distribution. 2
- f. Create a GR&R program by computer-assisted methods. 4
- g. Collect data and analyze results of gage capability study. 4 & 7
- h. Create computer-assisted program for a variable and attribute process. 5 & 6
- i. Collect data and analyze results for a variable and attribute process. 2, 5, 6, & 7
- j. Document technical information from gage capability, variable, and attribute processes in a neat and orderly format. 8
- k. Locate and extract needed information from operational and programming manuals. 8
- l. Complete assignments based on oral and written instructions. 8

Evaluation

Total evaluation will be based on the following point distribution.

Testing Procedures

Quizzes

25 points

Approximately 4-6 quizzes will be administered during the course. They will include discussion questions, short answer questions, true/false questions, and problem solving.

Participation

10 Points

Based on instructor observation during the course, each student will be evaluated on participation activities. Evaluation parameters to include active participation in class discussions, response to verbal questions, quizzes and regular attendance.

Laboratory Experiences

Process Capability Project

10 points

Variable Data Project

15 points

Attribute Data Project

15 points

Case Study**25 points**

The instructor will provide guidelines and requirements for each project.

Field Work

N/A

Other Evaluation Methods

N/A

Grading Scale

Final grade for this course will be based on the following alphabetical/numerical scale.

A	93-100
B+	88-92
B	83-87
C+	79-82
C	74-78
D	65-73
F	Below 65

Policies**Attendance Policy**

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic Affairs, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.

Academic Dishonesty

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

- Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
- Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.

- Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one's own work.
- Taking an exam for another student.
- Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
- Any of the above occurring within the Web or distance learning environment.

Please see the Mississippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

Accommodations for Disabilities

Students that need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Disability Services (DS) in order to receive accommodations in this course. [Disability Services](#) (<http://www.pstcc.edu/sswd/>) may be contacted via [Disability Services email](#) or by visiting Alexander 130.

Other Policies

Safety and Equipment Abuse

Repeated safety violations will result in a reduction of final grade, at the instructor's discretion. Flagrant violations which result in equipment damage or personal injury could result in automatic failure of the course