



Muhammad P. Jahan, Ph.D. Phone: 270-745-2176 E-mail: <u>muhammad.jahan@wku.edu</u>

## **Course Syllabus Spring 2016**

## **OFFICE HOURS**

Office: EST 217 Office Hours: MW 8:00 AM-11:00 AM, 3:00 PM – 5:00 PM or by appointment.

## **CATALOG DESCRIPTION:**

Prerequisites: MATH 116 Credit: 3 semester hours (lecture) A study of statistical techniques used in industry for purposes of Statistical Process Control, material science research, and system planning and operation.

#### **REQUIRED TEXTS:**

Besterfield, D.H. (2013). Quality Improvement 9th Ed. Pearson Prentice Hall, Upper Saddle River, NJ.

#### **COURSE OBJECTIVES:**

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

- Understand the importance of quality control and its relationship with statistics
- Demonstrate the application of analytical tools in quality control
- Demonstrate an understanding of systematic statistical process control (SPC) tools & techniques.
- Assess the value of processes with regard to cost, quality, schedule, and product improvement.
- Create control charts for variables and attributes type data.
- Calculate process capability.
- Interpret statistical data.
- Identify the importance of product reliability in quality control
- Describe total quality management principles.

#### **COURSE TOPICS:**

- Introduction to quality improvement
- Lean enterprise and six sigma
- Statistical process control (SPC)
- Fundamental of Statistics
- Control charts for variables
- Fundamental of probability
- Control charts for attributes
- Acceptance sampling
- Reliability

### **COURSE POLICIES, STRUCTURE & DESIGN:**

#### General:

The instructor reserves the right to change the syllabus or course topics as necessary and inform the students about the changes.

The lecture notes have been prepared from the textbook. The assigned reading from the text will enhance the understanding of the subject. As the lectures slides may contain outside information other than in specific chapter of the text, make sure you follow the lecture slides before referring to the text. The course will consist of readings from the assigned text and other supplemental materials, quizzes, and examinations.

#### **Assigned readings:**

The class lectures and textbook will provide you the content to support your success in the quizzes, and course exams.

#### Quizzes:

Quizzes on the assigned readings will ensure that you are adequately prepared for the mid-term and final examinations. Quizzes may be announced or not. **MISSED QUIZZES WILL NOT BE ABLE TO BE MADE UP.** 

#### **Class participation and discussion:**

Class participation and engaging in discussion is important and may add extra credit during marginal grade letter.

#### Mid-term and final exams:

**Exams are open book for this course, unless otherwise stated. There may be some take home exams.** However, the time limitation will be strictly followed. Exams will cover material in homework, reading assignments, lectures and class discussions. The student is responsible for all reading assignments and any class handouts whether or not covered in class or listed on the syllabus. If official University activities cause you to be absent on a test day make arrangements to take the tests prior to the test date.

#### **Online participation:**

This course is offered on-line, over the Internet, using the Learning Management System called Blackboard. Students are expected to devote the same amount of time for this course, as you'd spend in a regular on-site, face-to-face course. All assignments should be completed in order to pass the course. As with all successful projects, assignments must be submitted on time (in this course, about every week). Any assignments submitted after the planned due date will not be accepted. This is very important! LATE ASSIGNMENTS WILL NOT BE ACCEPTED. All assignments and papers will be submitted on-line. If you ever have problems transmitting your assignments to me, telephone or e-mail me immediately, and we'll get the problem solved.

Students should use e-mail for private messages to the instructor and other students. The discussion boards are for public messages and postings.

#### **GRADING:**

The grading scale is as follows: A = 90-100; B = 80-89; C = 70-79; D= 60-69; F = 0-59.

The grading for the course is as follows:

Quizzes: 100 points (4 quizzes, 25 points each)	[20%]
Discussions: 100 points (5 discussions, 20 points each)	[20%]
Exam-1: 100 points	[20%]
Exam-2: 100 points	[20%]
Final exam: 100 points	[20%]

#### **Total: 500 points**

[100%]

#### **GRADES BREAKDOWN:**

- A 450 500 points (90.0% 100%)
- B 400 449 points (80.0% 89.9%)
- C 350 399 points (70.0% 79.9%)
- D 300 349 points (60.0% 69.9%)
- F below 300 points (below 60%)

#### ACADEMIC HONESTY & PROFESSIONALISM:

All Western Kentucky University policies are in effect. All your work must be your own, unless I authorize collaboration, in which case you must, in writing, acknowledge the help you have received. Presenting the words, ideas, or expressions of another person in any form and claiming them as one's own is plagiarism and will not be tolerated. The claim of ignorance is no excuse. (See academic offenses in the WKU student handbook.)

Assignments have to be free of any writing or typing errors. Neatness, use of correct grammar, format, and so on will be considered in the evaluation of activities and projects. If the answer cannot be read, it will be assumed incorrect. Unless otherwise stated, all papers or formal lab reports must be word processed. Use appropriate margins and 12 font sizes in acceptable fonts like Times New Roman, Arial etc.

#### STUDENT DISABILITY SERVICES:

In compliance with university policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Office for Student Disability Services in Downing University Center, A-200. The phone number is (270) 745-5004. Please DO NOT request accommodations directly from the professor or instructor without a letter of accommodation from the Office for Student Disability Services.

## WEEK-WISE BREAKDOWN OF SYLLABUS

Week	Lecture Topic	Assigned Readings	Tentative schedule of quiz/assignment/exam
1	Introduction to Quality Improvement Lean Enterprise	Chapter 1 lecture slides Chapter 2 lecture slides Chapter 1&2 from book	Orientation discussion
2	Six Sigma Statistical Process Control	Chapter 3 lecture slides Chapter 4 lecture slides Chapter 3&4 from book	Discussion board 1 starts
3	Fundamental of Statistics	Chapter 5 lecture slides Chapter 5 from book	Quiz 1 (Chapters 1-4)
4	Fundamental of Statistics	Chapter 5 lecture slides Chapter 5 from book	
5	Control Charts for Variables	Chapter 6 lecture slides Chapter 6 from book	Discussion board 2 starts Quiz 2 (Chapters 5-6)
6	Additional SPC techniques for variables	Chapter 7 lecture slides Chapter 7 from book	
7	Additional SPC techniques for variables	Chapter 7 lecture slides Chapter 7 from book	Exam – 1 (Chapters 1-7)
		Mid-term Break	
8	Fundamentals of Probability	Chapter 8 lecture slides Chapter 8 from book	Discussion board 3 starts
9	Control Charts for Attributes	Chapter 9 lecture slides Chapter 9 from book	
10	Control Charts for Attributes	Chapter 9 lecture slides Chapter 9 from book	Quiz 3 (Chapters 7-9)
11	Acceptance Sampling	Chapter 10 lecture slides Chapter 10 from book	Discussion Board 4 starts
12	Reliability	Chapter 11 lecture slides Chapter 11 from book	

# All the schedules are tentative and may change based on the progress of the course.

13	Reliability	Chapter 11 lecture slides Chapter 11 from book	Discussion board 5 starts Exam-2 (Chapters 8-11)
14	Management and Planning Tools	Chapter 12 lecture slides Chapter 12 from book	Quiz 4 (Chapters 10-11)
			Final exam (All chapters)