Quality Process Course Description

Course Description
This course introduces students to the principles of quality assurance, lean manufacturing, quality improvement, inspecting for quality, and continuous improvement to ensure that products and processes meet quality system requirements. Students will learn entry-level critical work functions to ensure materials, processes, and final products meet quality specifications and to support and maintain quality systems. Prerequisite: Basic Algebra or equivalent skills.

Essential Objectives

1. Identify and define key principles in Quality and Continuous Process Improvement disciplines.
2. Explain the history of the quality improvement movement and identify the individuals responsible for the initial implementation of quality programs.
3. Understand the terminology used by organizations surrounding improvement efforts.
4. Evaluate the implications Total Quality Management and Process Improvement have in supporting organizational success.
5. Understand and utilize Lean and Six Sigma concepts.
6. Discuss the importance of focusing on internal and external customer needs and expectations and understand the critical link between customers and suppliers.
7. Utilize a structured, fact-based system for solving problems and apply a variety of problem solving tools and methods such as fishbone diagrams, value stream mapping, and Pareto charts to identify possible solutions.
8. Demonstrate an understanding of basic data analysis for use with statistical process control methods including mean, median, mode, and standard deviation calculations.
9. Understand the importance of collecting data and identify the appropriate use of charts, graphs and diagrams when analyzing problems.
10. Identify and examine the roles, challenges and success strategies for work teams involved in quality and process improvement efforts.

Methods

- Small-group and whole-class discussion
- Online discussions via Moodle
- Mini-lectures and Power Points presentations
- Written Homework assignments
- Multiple-Choice Exams
- Demonstration of quality improvement tools

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Evaluation Criteria:

- Participation is required and constitutes 20% of your course grade. Failure will occur if the student misses more than two weeks of class. Participation is based on contributions to in-class discussion, demonstration activities, discussion board participation, and homework completion.
- Reflective journal writing will constitute 30%
- Demonstration projects will constitute 30% of your grade.
- Exams will constitute 20% of your grade

Participation

Student participation is essential in this course because there are many hands-on activities. Your full cooperation and participation is essential for all students to get the full benefit of these experiences. You will learn later in the course that one cornerstone of continuous process improvement within organizations is organization-wide participation; the same applies for this course. Activities in this course will include:

1. Process Improvement Ball Toss
2. Win as Much as you Can
3. Value Stream Analysis Demonstration
4. Process Improvement Simulation
5. The M&M Experiment

Journal Questions

Students will submit three journals during the course. These reflective journals will explore a process improvement topic and requires students to respond to specific questions. Students will be provided with an outline and guide questions to consider in order to complete the journal successfully. The journals will be graded based on the rubric located here.

Demonstration Projects

Demonstration projects require students to demonstrate the use of a quality improvement tool they have learned and apply it to a real life problem. Students will be able to submit powerpoint, video recorded, or type written projects. Presentations may also be required for the in-person version of this course. Click here for a more detailed description of project requirements.

Project 1: 5S
Project 2: Value Analysis

Exams

There will be a take home final exam for this course.

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Textbooks:
Two textbooks will be utilized in the course. Students should read the chapters listed in the week-by-week syllabus prior to attending class.

The Quality Improvement Handbook, second edition. Bauer, Duffy, and Westcott. Published by American Society for Quality. Referred to on Syllabus as **QIH.**

Quality Management. Graeme Knowles & Ventus Publishing (free eBook). Referred to on Syllabus as **QM.**

Attendance Policy:
More than two weeks of absence will generally result in a failing grade in the course.

Faculty Contact Information:
David Prudente
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Hiring Coordinator for this course:

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Week	Topic	Assignment
1	Introduction to Quality Improvement • Definition of Quality • Understanding of Quality Management • Develop Quality Thinking • Understand Systems and Processes • Lean • Six Sigma	Reading: Chapter 1 QIH (pg. 2-13) Chapter 2 QM (pg. 9-17)
2	History of Quality Initiatives and Benefits of Quality • Why Quality Management is a requirement today • Deming • Crosby • Juran • Japanese Influences	Reading: Chapter 2 QIH (pg. 15-35) Chapter 3 & 4 QM (18-33) Assignment: Journal 1 Questions Assigned
3	Approaches to Quality • Standards and Models • ISO 9000 • Baldridge • Big Q, little q • 5S Demonstration Activity	Reading: Chapter 5 QM (pg. 38-43) Activity: 5S Demonstration Project Assignment
4	Organizational Frame Work For Quality Initiatives/Focus on Customer • Focus on Customers • SIPOC	Due: Journal 1 Questions Reading: Chapter 10 QIH (pg. 149-166) Chapter 6 QM (pg. 51-58)
5	Use of Teams in Quality Improvement Efforts • Purpose of Teams • Teamwork • Types • Value • Empowerment, Motivation, and Participation	5S Demonstration Project Due Reading Chapter 3 QIH (pg. 40-46) Chapter 11 QM (pg. 117-136) Activity: River Crossing
6	Team formation and Group Dynamics Roles and Responsibilities • Team formation • Team stages • Decision Making • Self-Interest vs. Organizational Effectiveness	Reading: Chapter 4 & 5 QIH (pg. 47-68) Activity: Win as much as you can
7	Leadership • Principles of Leadership • Leadership Decision Making • See The Need, Take The Lead	Reading: Chapter 7 QM (pg. 59-79) Assignment: Journal Question 2

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8	Continuous Improvement • Incremental vs. breakthrough Improvements • Processes • Intro to Statistical Process Control • Value vs. non Value Activities • The 8 Wastes	Reading: Chapter 6 QIH (pg. 72-79) Chapter 9 QM (pg. 90-108) Activity: Ball Toss
9	Improvement Cycles • PDCA • Process Improvement • Value Analysis/Flow Chart	Due: Journal Question 2 Reading: Chapter 7 QIH (pg. 80-99) Chapter 13 QM (pg. 150-165) Assignment: Demonstration Project 2 Value Analysis/Flow Chart a process
10	Problem Solving Process • Gap Analysis • Fishbone Diagram • Five Whys? • Critical Thinking/Problem Solving Models • Action Plan	Reading: Chapter 8 QIH (pg. 100-108)
11	Introduction to Problem Solving Tools • Affinity Diagram • Benchmarking • Brainstorming • Check Sheets • Control Charts • Force-Field Analysis	Due: Demonstration Project 2 Value Analysis/Flow Chart Reading: Chapter 9 QIH (pg. 109-143) Assignment: Demonstration Project 3
12	Application of Problem Solving Tools • Process Improvement Simulation	Reading: Chapter 14 QM (pg. 167-176)
13	Statistical Process Control • Variation • Six-Sigma • Control Chart • Upper Control Limit • Lower Control Limit	Due: Demonstration Project Due Assignment: Journal Question 3
14	Applied Statistical Process Control • M&M Experiment	Assignment: Take-home Exam
15	The Future of Process Improvement • How trends will affect the field of quality • How will you apply Quality & Process Improvement	Due: Take-home Exam Journal Question 3