

**IET 419: Total Quality Control**

**Course Syllabus**

**FALL 206**

Department of Engineering and Technology Management

School of Engineering and Information Systems

Morehead State University

**Course Description**

Total Quality Control, IET 619, 3-0-3 hours; on demand. Prerequisite: IET 419 or consent of the instructor. A study of techniques in Statistical Process Control and Quality Engineering and their impact on the quality, effectiveness, and competitiveness of products.

**Instructor:**

Jared May

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**Course Contents**

This course is designed to introduce students to techniques in Total Quality Control and to examine their impact on productivity, quality, and competitiveness. The course is intended to help students utilize the concepts of Statistical Process Control and Quality Engineering in order to improve product's quality and competitiveness. Students will be encouraged to synthesize organizational management methods in Total Quality Management as related to productivity, effectiveness, and competiveness of products and processes.

**Reading Materials**

**Required Text**

Aikens, C. H. (2011). *Quality Inspired Management, The Key to Sustainability*, Upper Saddle River, NJ: Prentice Hall; ISBN: 978-0-13-119756-5

\*Pyzdek, T., & Keller, P. (2010). Six Sigma Handbook: A Complete Guide for Green Belts, Black Belts, and Managers at All Levels. McGraw-Hill, New York.

**\*MSU Library has online copies, so it is recommended that you contact the library.**

**Supplementary Text**

Besterfield, D. H., Besterfield-Michna, C., Besterfield, G. H, & Besterfield-Sacre, M. (2003). *Total* *Quality Management,* Upper Saddle River, NJ: Prentice Hall.

**Course Objectives**

At the conclusion of the course, student should be able to:

1. Realize the need for continuous improvement, and analyze various approaches to improving productivity and quality of products. **(Assessed by Individual Assignment 1 and Exam 1)**
2. Analyze methods of increasing productivity and quality in industrial organizations. **(Assessed** **by Discussion Board 2, Individual Assignment 2, and Exam 1)**
3. Analyze and employ Quality Improvement and Problem Solving techniques, such as PDCA/PDSA Cycle, DMAIC tactics, and Quality Function Deployment. **(Assessed by**

**Individual Assignment 2, Case Studies, and Exam 1)**

1. Investigate and analyze the quality management techniques/approaches responsible for success or failure of organization. **(Assessed by Group Project)**
2. Conceptualize the importance of continuous improvement, employee involvement, and team-work approach in implementing a Total Quality Improvement program. **(Assessed by Group**

**Project)**

1. Utilize tools and techniques of Total Quality Improvement including, statistical process control, control charts, and process capability techniques. **(Assessed by Individual Assignment 3,**

**Exam 2, Group Project, and Final Exam)**

1. Analyze methods for effective Experimental Design and Contemporary Quality Engineering.

**(Assessed by Individual Assignment 4, Research Paper, and Final Exam)**

1. Demonstrate skills of planning, organizing, and presentation as relates to Total Quality Improvement. **(Assessed by Student Portfolio, and Group Project)**

**Course Requirements**

1. **Personal Information Blog**: Students are to complete their personal information blog in Blackboard. Instructions for this assignment will be posted during the first week. The due for this assignment will be announced by the instructor.
2. **Discussion Board**: Students are required to participate constructively in all discussion boardactivities in order to earn the points assigned for discussion board activities. At the beginning of each week, the instructor will inform students of the due dates for discussion board. No posts to the discussion board will be accepted after the announced due date.
3. **Individual Projects/Assignments:** Each student will be required to submit weekly individualprojects/assignments that will be assigned and posted by the instructor. Each individual project/assignment must be submitted on the specified due date. There will be one grading scale deduction from the assignment total grade for each delay week after the due date. Should a student need to miss an assignment, the instructor must be consulted beforehand. MSU’s excused absences fall into five categories: 1) University sponsored activities; 2) Student/Family illness/death; 3) Military obligations; 4) Jury duty or subpoena for court appearances, or 5) Major religious holidays. (Competencies 1 – 4, 6 - 8).
4. **Exams:** There will be two (2) exams during the semester and a FINAL EXAM. There will beno makeup exams. To identify the students understanding of the topics covered, multiple-choice, true/false, and short essay questions will be used in the exams.

There is no substitute for any exams. Should a student need to miss an exam, the instructor must be consulted beforehand. Otherwise, it is not accepted and the student will not receive any credit for that exam. MSU’s excused absences are listed in (3) above.

1. **Group Projects:** Groups are assigned by the instructor. Each group will be assigned a TotalQuality Control task as a group project. Each group will complete the project and report the results

in two formats: one a power point presentation summarizing the project, and one MS Word document, detailing the project. Both of these are due by the deadline to be announced by the instructor. There is no substitute for these activities.

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|  | **Evaluation** | | |  |  |  |  |
|  | Activity | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Percentage | | | |
|  | Syllabus Quiz | | |  | 2% |  |  |
|  | Personal Information Blog Page | | |  | 3% |  |  |
|  | Class Participation (Discussion Board) | | |  | 10% |  |  |
|  | Individual Assignments (5) | | |  | 35% |  |  |
|  | Group Projects | | |  | 10% |  |  |
|  | Exams (2) | | |  | 30% |  |  |
|  | Final Exam | | |  | 25% |  |  |
|  | Electronic Portfolios | | |  | 5% |  |  |
|  |  |  |
|  |  | | |  |  |  |  |
|  | **Total** | | |  | **100%** |  |  |
|  | **Note:** 90-100% = A; 80-89% = B; | | | 70-79% = C; | 60-69% = D; Below 60% = E | | |
|  | **Note that blackboard grades may not reflect the above weighting. .** | | |  |  | | |

**ACADEMIC HONESTY**

Cheating, fabrication, plagiarism or helping others to commit these acts will not be tolerated. Academic dishonesty will result in severe disciplinary action including, but not limited to, failure of the student assessment item or course, and/or dismissal from MSU. If you are not sure what constitutes academic dishonesty, read The Eagle: Student Handbook or ask your instructor. The policy is located at:

*http://www.morehead-st.edu./units/studentlife/handbook/academicdishonesty.html*

For example: Copying information from the Internet is plagiarism if appropriate credit is not given.

**POLICY for ACCOMMODATING STUDENTS with DISABILITIES**

Professional staff from MSU Academic Services Center (ASC) coordinates efforts to address accessibility needs and class accommodations with instructors of students who have learning or physical disabilities. Faculty will cooperate with the ASC staff to accommodate the needs of students taking departmental courses.

**CAMPUS SAFETY STATEMENT**

Emergency response information will be discussed in class. Students should familiarize themselves with the nearest exit routes in the event evacuation becomes necessary. You should notify your instructor at the beginning of the semester if you have special needs or will require assistance during an emergency evacuation. Students should familiarize themselves with emergency response protocols at  [www.moreheadstate.edu/emergency](http://www.moreheadstate.edu/emergency).

**CONTINGENCY PLAN**

In case of emergency that may impact classes, students are expected to contact Blackboard for an announcement by the instructor.

**COURSE OUTLINE** **TOTA**L **QUALITY CONTROL (IET 619)** **FALL 2015**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **WEEK 1 & 2** |  |  |
|  | Topic/Activity | Chapter | |
| **Syllabus and Course Introduction** | |  |  |
|  | **Intro to TQM, Quality Overview** | **Ch. 1** | |
|  | Syllabus Quiz and Personal Info Page assigned | | |
|  | **Planning, Benchmark, Leadership** | **Ch. 2** | |
|  | Syllabus Quiz due |  |  |
|  | IA1 assigned and DB 1 |  |  |

**WEEK 5 & 6**

**EXAM 1**

**Statistical Process Control (SPC)** **Ch. 8**

DB 4

WEEK 9 & 10

|  |  |
| --- | --- |
| **SPC by Attributes** | **Ch. 10** |

IA 4 due

DB 7

Group Project Assignment

**WEEK 13 & 14**

Group Project Work

IA5 assigned

Group Project Update

IA5 and **Research Paper** due

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **WEEK 3 & 4** |  |  |
|  |  | Topic/Activity | Chapter |  |
|  | | **Quality Management Systems** |  |  |
|  |  | **Total Quality Management Tools** | **Ch. 7** | |
|  |  | Personal Info Blog Page due, IA1 due |  |  |
|  |  | IA2 and DB 2 assigned |  |  |
|  | | **Problem Solving Techniques** | **Ch. 7** | |
|  |  | IA2 due |  |  |
|  |  | DB 3 |  |  |
|  |  |  |  |  |
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|  |  | **WEEK 7 & 8** |  |  |
|  | **SPC by Variables** | | **Ch. 8** | |
|  |  | IA3 assigned |  |  |
|  |  | DB 5 |  |  |
|  |  |  | | |
|  | | **SPC - Process Capability** | **Ch. 9** | |
|  |  | IA3 due |  |  |
|  |  | IA4 assigned and DB 6 |  |  |
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|  |  |  |  |  |
|  |  | WEEK 11 & 12 |  |  |
|  | | **SPC software** |  |  |
|  |  | DB 8 |  |  |
|  |  |  |  |  |
|  | | **Special Topics** |  |  |
|  |  | **Quality Engineering: Six Sigma** | **Ch. 14** | |
|  |  | **Quality Engineering: Taguchi, QFD** | **Ch. 5** | |
|  |  | **Experimental Design: DOE, ANOVA** | **Ch. 13** | |
|  |  |  |  |  |

**WEEK 15 & 16**

**Final Group Project Presentations**

Electronic Portfolio assignment

**Course Overview** (Review for Final Exam) Electronic Portfolios due

IA = Individual Assignment DB = Discussion Board GP = Group Project

**NOTE: This syllabus is subject to change at the discretion of the instructor to accommodate student and/or instructional needs.**

**Reference**

Akao, Y. (1990). *Quality function deployment*. Cambridge, MA: Productivity Press. Capezio, P., & Morehouse, D. (1993). *Taking the mystery out of TQM: A practical guide to*

*total quality management*. Hawthorne, NJ: Career Press.Crosby, P. B. (1979). *Quality is free*. New York, NY: McGraw-Hill.

Crosby, P. B. (1984). *Quality without tears: the art of hassle-free management*. New York, NY: McGraw-Hill.

Deming, W. E. (1986). *Out of crisis*. Cambridge, MA: Massachusetts Institute of Technology, Center for Advanced Engineering Study.

Feigenbaum, A.V. (1983). *Total quality control*. New York, NY: McGraw-Hill.

Gitlow, H.S., and Gitlow, S. (1987). *The Deming guide to quality and competitive position*. Angled Cliffs, NJ: Prentice-Hall, Inc.

Goldratt, E. M., and Cox, J. (1986). *The goal: a process of ongoing improvement.* Croton-on-Hudson, NY: North River Press.

Imai, M. (1986). *Kaizen: the key to Japan's competitive success*. New York, NY: Random House.

Ishikawa, K. (1990). *Introduction to quality control*. Tokyo, Japan: 3A Corporation. Juran, J. M. (1992). *Juran on quality by design*. New York, NY: The Free Press.

Juran, J. M. (1989). Juran on leadership for quality: an executive handbook. New York, NY: The Free Press.

Juran, J. M. (1988). *Juran's quality control handbook*. New York, NY: McGraw-Hill. Scherkenback, W. W. (1991). *Deming’s road to continual improvement*. Knoxville, TN: SPC

Press.

Scherkenback, W. W. (1986). *Deming’s route to quality and productivity: road maps and* *roadblocks*

Schonberger, R. J. (1982). *Japanese manufacturing techniques*. New York, NY: The Free Press.

Senge, P. (1991). *The fifth discipline: the arts and practice of the learning organization*. New York, NY: Doubleday Currency.

Townsend, P., Gebbardi, J. E. (1990). *Commit to quality*. New York, NY: John Wiley & Sons. Walton, M. (1990). *Deming management at work*. New York, NY: The Putnam Publishing

Group.

Winchell, W. O. (1992). *TQM: Getting started and achieving results with total quality* *management*. Dearborn, MI: Society of Manufacturing Engineers.