New Jersey Institute of Technology
Department of Engineering Technology
MNET 420 Quality Systems

COURSE NUMBER MNET 420

COURSE DESCRIPTION Quality Systems

COURSE STRUCTURE (2-2-3) (lecture hr/wk - lab hr/wk – course credits)

COURSE COORDINATOR/ INSTRUCTOR Dr. S. Lieber/ E. May

COURSE DESCRIPTION This course introduces students to the basic concepts, definitions, methodologies, calculations, and metrics that are used to manage for quality and performance excellence. The course highlights Quality Management Systems, Methodologies and Awards such as ISO 9000, Lean Thinking, Six Sigma Quality, the Malcolm Baldrige National Quality Award and the Deming Prize. Guest Speakers bring their real world experience to the classroom. Students are divided into project teams, which study important topics within the world of Quality, and present their findings to the rest of the class.

PREREQUISITE(S) MNET 315 Industrial Statistics or equivalent

COREQUISITE(S) None

REQUIRED MATERIALS
1. Evans and Lindsay, Managing for Quality and Performance Excellence, South-Western Cenage Learning, 12th Edition. ISBN 9780357984789
2. Statistical Calculator

COMPUTER USAGE Excel, MiniTab

COURSE OUTCOMES (CO)

By the end of the course students should be able to:
1. Describe the history and ongoing evolution of Quality and provide a myriad of definitions for Quality.
2. Employ basic Quality principles, practices and techniques and describe how Quality is applied to manufacturing operations, services, health care, education, small business, not-for profit organizations, the public sector.
3. Explain the contributions of Quality luminaries such as Deming, Juran, Crosby, Feigenbaum, Ishikawa and Taguchi to the field.
4. Differentiate between the MBNQA and other international Quality Award programs such as the Deming Prize, and the Quality Award programs in Europe, Canada, and Australia.
5. Explain the structure, factors leading to, implementation process, registration process, and benefits of ISO 9000.
6. Understand Strategic Focus for Performance Excellence, Focusing on Customers, High Performance Workforce Management, Process Management, Performance Measurement and Information Management, Leading, Building and Sustaining Performance Excellence.
7. Use the seven Quality Control tools, the seven Management and

Quality Tools, Customer Satisfaction Surveys, Lean tools, Kaizen, Poka Yoke, Balanced Scorecard, Quality Costs, Six Sigma tools, etc.

8. Use statistical thinking and applications such as descriptive statistics, statistical analysis, statistical inference, enumerative and analytic studies, Design of Experiments, ANOVA, Regression and Correlation.
9. Understand the statistical basis for Six Sigma, the DMAIC methodology, and how to manage a Six Sigma project.
10. Understand and use Design for Six Sigma including Quality Function Deployment, Design for X, Reliability Testing, Gage R & R studies, and calculations of capability.
11. Understand Statistical Process Control methodology and implementation.
12. Construct and interpret control charts for variable data (Average & Range, Average & Sigma, etc.) and for attribute data (p, np, c, u).
13. Research, as a team, a Quality topic and present findings via PowerPoint to the rest of the class.

CLASS TOPICS

Introduction to Quality, Foundations of Quality Management, Customer Focus, Workforce Focus, Process Focus, Statistical Methods in Quality Management, Design for Quality and Product Excellence, Measuring and Controlling Quality, Problem Solving and Quality Improvement, Six Sigma Concepts and Implementation, The Baldrige Framework for Performance Excellence, Strategy and Performance Excellence, Measurement and Knowledge Management for Performance Excellence, Leadership for Performance Excellence, Building and Sustaining Quality and Performance Excellence.

STUDENT OUTCOMES

The Course Learning Outcomes support the achievement of the following MET Student Outcomes and TAC of ABET Criterion 9 requirements:

Student Outcome 1 - an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;
Related CO – 1-13

Student Outcome 3 - an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
Related CO – 13

Student Outcome 5 - an ability to function effectively as a member as well as a leader on technical teams.

New Jersey Institute of Technology
Department of Engineering Technology
MNET 420 Quality Systems

Related CO – 13

GRADING POLICY

Class Participation	10%
Homework	10%
Team Project	10%
Quizzes	10%
Tests (a total of 4 tests)	60%

ACADEMIC INTEGRITY

NJIT has a zero-tolerance policy regarding cheating of any kind. Student behavior that is disruptive to the learning environment will not be tolerated. Incidents will be reported to the Dean of Students. Honor Code violations may result in failure in the course, disciplinary probation, and/or expulsion from NJIT. Refer to http://www.njit.edu/academics/honorcode.php.

STUDENT BEHAVIOR

- Students expected to arrive on time & stay for the entire class.
- Electronic communication devices turned off.
- Laptop computers used during class, for academic purposes, are OK.
- Class time should be participative.
- You should try to be part of the discussion

MODIFICATION TO COURSE

The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be consulted if any changes occur. .

PREPARED BY
Ed May

COURSE COORDINATED BY
Dr. S. Lieber

CLASS HOURS

Monday 6:00 PM to 10:05 PM CKB 214

OFFICE HOURS

Before Class After Class or By Appointment:
Cell Phone 201-274-6257 Email emay@njit.edu

New Jersey Institute of Technology
Department of Engineering Technology
MNET 420 Quality Systems

GRADING LEGEND

GRADE	NUMERIC RANGE
A	90 to 100
B+	85 to 89
B	80 to 84
C+	75 to 79
C	70 to 74
D	60 to 69
F	0 to 59

GENERATIVE AI

Student use of artificial intelligence (AI) is permitted in this course for certain assignments and activities. It is not permitted to be used in the assignments noted by the instructor, as doing so would undermine student learning and achievement of course learning outcomes. Additionally, if and when students use AI in this course, the AI must be cited as is shown within the NJIT Library AI citation page for AI. If you have any questions or concerns about AI technology use in this class, please reach out to your instructor prior to submitting any assignments.

New Jersey Institute of Technology
Department of Engineering Technology
MNET 420 Quality Systems

COURSE OUTLINE

Before semester starts: get Welcome Email from Instructor, Read Syllabus & Schedule, Buy Text, Read Ch 1 & 2. During the Semester a total of 5 speakers are planned: ISO, Lean, Six Sigma, Baldrige Award, Deming Prize

Week	**Date**	**Topics & Assignments**
1	9/8	Course Handout - Class Session One PowerPoint - Discuss Teams – Teach Ch 1 Introduction to Quality and Ch 2 Foundations of Quality.
2	9/15	Quiz Zero due - Questionnaire due - Self Introductions - Pick Teams – Teach Ch 3 Customer Focus, Ch 4 Workplace Focus, Ch 5 Process Focus
3	9/22	Ch 1 to 5 Homework & Quizzes due, Teach Ch 6 Statistical Methods in Quality Management
4	9/29	**Test #1 on Chapter 1 through 5**; Extra Credit #1 due, Teach Ch 7 Design for Quality and Product Excellence
5	10/6	Ch 6 and 7 Homework & Quizzes due, Teach Ch 8 Measuring and Controlling Quality
6	10/13	**Test #2 on Chapters 6 and 7**; Extra Credit #2 Due
7	10/20	Teach Ch 9 Problem Solving and Quality Improvement and Ch 10 Six Sigma Concepts and Implementation
8	10/27	Ch 8, 9 and 10 Homework & Quizzes due
9	11/3	**Test #3 on Chapters 8, 9 and 10**; Extra Credit #3 due
10	11/10	Teach Ch 11 The Baldrige Framework for Performance Excellence, Ch 12 Strategy & Performance Excellence and Ch 13 Measurement & Knowledge Measurement for Performance Excellence
11	11/17	Teach Ch 14 Leadership for Performance Excellence and Ch 15 Building & Sustaining Quality and Performance Excellence
12	11/24	Ch 11 to 15 Homework & Quizzes Due
13	12/1	Workshop on Team Presentations
14	12/8	Team Presentations
TBD		**TEST #4 Final Exam on Chapters 11 through 15**; Team Written Reports due - Team Self Evaluations due - Extra Credit #4 due