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## **MNET 420-450: Quality Systems**

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

<b>COURSE NUMBER</b>	MNET 420
<b>COURSE DESCRIPTION</b>	Quality Systems
<b>COURSE STRUCTURE</b>	(2-2-3) (lecture hr/wk - lab hr/wk – course credits)
<b>COURSE COORDINATOR/ INSTRUCTOR</b>	Dr. S. Lieber/ E. May
<b>COURSE DESCRIPTION</b>	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.
<b>PREREQUISITE(S)</b>	MNET 315 Industrial Statistics or equivalent
<b>COREQUISITE(S)</b>	None
<b>REQUIRED MATERIALS</b>	<ol style="list-style-type: none"><li>1. Evans and Lindsay, Managing for Quality and Performance Excellence, South-Western Cengage Learning, 10<sup>th</sup> Edition. ISBN 9781305662544</li><li>2. Statistical Calculator</li><li>3. MOODLE <a href="http://moodle.njit.edu">http://moodle.njit.edu</a></li></ol>
<b>COMPUTER USAGE</b>	Excel, MiniTab
<b>COURSE LEARNING OUTCOMES</b>	By the end of the course students should be able to: <ol style="list-style-type: none"><li>1. Describe the history and ongoing evolution of Quality and provide a myriad of definitions for Quality.</li><li>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.</li><li>3. Explain the contributions of Quality luminaries such as Deming, Juran, Crosby, Feigenbaum, Ishikawa and Taguchi to the field.</li><li>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.</li><li>5. Explain the structure, factors leading to, implementation process, registration process, and benefits of ISO 9000.</li><li>6. Understand Strategic Focus for Performance Excellence, Focusing on Customers, High Performance Workforce Management, Process Management, Performance Measurement</li></ol>

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- 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, Total Quality in Organizations, Philosophies and Frameworks, 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, Statistical Thinking and Applications, Six Sigma and Process Improvement, Design for Quality and Product Excellence, Statistical Process Control.

**STUDENT OUTCOMES**

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

**Student Outcome a** - an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;

**Related CLO – 1-13**

**Student Outcome b** - an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies;

**Related CLO – 7 thru 13**

**Student Outcome e** - an ability to function effectively as a member or leader on a technical team;

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**Related CLO – 13**

**Student Outcome f** - an ability to identify, analyze, and solve broadly-defined engineering technology problems;

**Related CLO – 2, 13**

**Student Outcome g** - an ability to apply written, oral, and graphical communication in both technical and nontechnical environments; and an ability to identify and use appropriate technical literature.

**Related CLO – 13**

**Student Outcome j** - a knowledge of the impact of engineering technology solutions in a societal and global context.

**Related CLO – 1 thru 3**

**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  
COURSE COORDINATED  
BY**

Ed May  
Dr. S. Lieber

**CLASS HOURS**

Wednesday 5:45 PM to 9:50 PM      Instructor Scheduled  
Webex Meeting

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**OFFICE HOURS**

Before Class After Class or By Appointment:

Cell Phone 201-274-6257 Email emay@njit.edu

**SYNCHRONOUS ONLINE INFORMATION**

The instructor will discuss these requirements on the first day of the course and/or post on their Learning Management System (LMS). Please become familiar

- Webex: <http://ist.njit.edu/webex>
- Online Proctoring: <https://ist.njit.edu/online-proctoring/>

**GRADING LEGEND**

<b>GRADE</b>	<b>NUMERIC RANGE</b>
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

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**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

<b>Week</b>	<b>Topics &amp; Assignments</b>
<b>1</b> 5/20	Course Handout - Class Session One PowerPoint - Discuss Teams –  Teach Chapters 1, 2, 3, 4, 5
<b>2</b> 5/27	Quiz Zero due - Questionnaire due - Self Intros - Pick Teams –  Ch 1 to 5 Homework & Quizzes due; Teach Chapter 6
<b>3</b> 6/3	<b>TEST #1</b> on Chapter 1 through 5; Extra Credit due; Teach Chapter 7
<b>4</b> 6/10	Ch 6 & 7 Homework and Quizzes due; Teach Ch 8
<b>5</b> 6/17	<b>TEST #2</b> on Chapters 6 & 7; Extra Credit Due; Teach Ch 9
<b>6</b> 6/24	Ch 8 & 9 Homework & Quizzes due
<b>7</b> 7/1	<b>TEST #3</b> on Ch 8 & 9; Extra Credit due
<b>8</b> 7/8	Teach Ch 10 - 11 - 12 - 13 -14
<b>9</b> 7/15	Ch 10 to 14 Homework & Quizzes Due
<b>10</b> 7/22	Team PowerPoint Presentations
<b>11</b> 7/29	Team Written Reports - Extra Credit due
<b>TBD</b>	<b>Final Exam on Ch 10 - 11 - 12 - 13 - 14</b>