

ILLINOIS STATE UNIVERSITY
Department of Technology
TEC 489.38 – Quality Management Systems
Date of Proposal: 10/07

Catalog Description:

Quality Management Systems

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Understand and manage quality principles, and process management systems in the context of contemporary quality systems, their history and commitment to customer focus.

Course Overview:

Course gives students a broad based understanding of quality principles, and management systems. Place present day quality systems and initiatives in historical context. Manage and modify quality systems to maintain customer focus.

Student Objectives:

Through successful completion of **TEC 489.37**, students have the opportunity to develop and demonstrate knowledge, skills and competencies in the following areas:

1. Comprehend and be able to evaluate diverse quality initiatives and systems.
2. Understand the history and theoretical approaches to quality.
3. Be able to apply quality philosophies and tools.
4. Create and evaluate process management systems.
5. Analyze and evaluate a customer-focused organization.
6. Create and evaluate a supply chain management system.
7. Evaluate and apply ethical practices.

Topical Outline

Quality Concepts and Tools

Quality Concepts

- **Customers and suppliers** -- Define internal and external customers, identify their expectations, and determine their satisfaction levels; define internal and external suppliers and key elements of relations with them.
- **Quality principles for products and processes** -- Identify basic quality principles related to products (such as features, fitness-for-use, freedom from defects, etc.) and processes (such as monitoring, measuring, continuous improvement, etc.).
- **Quality standards, requirements, and specifications** -- Define and distinguish between quality standards, requirements, and specifications.
- **Cost of quality (COQ)** -- Describe the four classic cost of quality (COQ) categories and their uses.

- **Six sigma** - Identify key components of six sigma such as belt levels, tools, types of projects, processes used, etc.
- **Continuous improvement techniques** -- Define and apply the principles of various continuous improvement techniques including the PDCA cycle, lean manufacturing, brainstorming, benchmarking, etc., to solve various quality problems.
- **Quality system effectiveness** -- Use various tools to evaluate the effectiveness of the quality system, including balanced scorecard, skip-level meetings, management reviews, internal audits, feedback from internal and external customers, warranty data, traceability and product recall process reviews, etc.

Quality Models and Theories

- **MBNQA Criteria for Performance Excellence** -- Define and describe how the Malcolm Baldrige National Quality Award (MBNQA) criteria are used as a management model in support of performance excellence.
- **ISO and other third-party standards** -- Define and describe how ISO Standards can be used to support quality management systems.
- **Other quality methodologies** -- Describe and differentiate programs such as total quality management (TQM), continuous quality improvement (CQI), six sigma, benchmarking, etc.
- **Quality philosophies** -- Define and describe the basic methodologies and theories proposed by quality leaders such as Deming, Juran, Crosby, Feigenbaum, Ishikawa, and others.
- **Process improvement tools** -- Select, interpret and apply tools six sigma DMAIC & DMEDI models, failure mode and effects analysis (FMEA), in various situations.
- **Innovation and creativity tools** -- Use various techniques and exercises for creative decision-making and problem-solving, including brainstorming, mind mapping, lateral thinking, critical thinking, design for six sigma (DFSS), etc.
- **Lean tools** -- Identify and apply lean tools and processes such as cycle-time reduction, 5 Ss, just-in-time (JIT), kanban, value streams, etc.

Process Management

- **Process goals** -- Describe how process goals are established, monitored, and measured and what impact they will have on product or service quality.
- **Process analysis** -- Use process mapping, flowcharting, and other visual aids to analyze a process and compare it to written procedures, work instructions, and other documents.
- **Resource allocation and deployment** -- Evaluate current resources to ensure they are available and deployed in support of strategic initiatives. Identify and eliminate administrative barriers to new initiatives. Ensure that all stakeholders understand the plan and have the skills necessary to carry out their responsibilities. Identify advocates/cheerleaders for the plan and assign them initial activities and leadership roles.

- **Organizational performance measurement** -- Design and use performance measures to drive and monitor organizational performance, and evaluate the results in relation to the plan.
- **Quality function in strategic deployment** -- Represent the quality function in support of strategic plan deployment, and ensure that the voice of the customer is addressed throughout the process. (
- **Process improvement tools** -- Select, interpret and apply tools such as root cause analysis, PDCA, statistical process control (SPC), in various situations.

Customer-Focused Organizations

Customer Identification and Segmentation

- **Internal customers** -- Define and describe the impact an organization's treatment of internal customers will have on external customers, and develop methods for energizing internal customers to improve products, processes, and services.
- **External customers** -- Define and describe external customers and their impact on products and services, and develop strategies for working with them to improve products, services, and internal processes.

Customer Relationship Management

- **Customer needs** -- Use various tools and techniques to identify and prioritize customer needs and expectations, including the voice of customer, house of quality, quality function deployment (QFD), focus groups, customer surveys, etc.
- **Customer satisfaction and loyalty** -- Develop systems to capture customer perceptions and experiences using a variety of feedback mechanisms (e.g., complaints, surveys, interviews, guarantee/warranty data), and use customer value analysis, corrective actions, etc., to measure and improve satisfaction. Describe ways of measuring the value of existing customers and the financial impact of losing customers.
- **Basic customer service principles** -- Describe and develop strategies for deploying and supporting principles such as courtesy, politeness, smiles, attention to detail, rapid response, etc.
- **Multiple and diverse customer management** -- Establish and monitor priorities to avoid and resolve conflicting customer requirements and demands, and develop methods and systems for managing capacity and resources to meet the needs of multiple customers. Describe the impact that diverse customer groups can have on all aspects of product and service development and delivery.

Supply Chain Management

- **Supplier Selection** -- Define and develop selection criteria such as rating programs, external certification standards, etc., and identify and manage their impact on various internal processes of the organization.

- **Supplier Communications** -- Design and implement techniques for communicating with suppliers including scheduled meetings, routine and emergency reporting procedures, presenting explicit expectations, confirming awareness of criticality, etc.
- **Supplier Performance** -- Define and describe common measures of supplier performance (e.g., quality, price, delivery, service levels) and metrics (e.g., defect rates, functional performance, timeliness, responsiveness, availability of technical support).
- **Supplier Improvement** -- Design and conduct supplier audits, evaluate corrective and preventive action plans, provide feedback, and monitor for process improvement.
- **Supplier Certification, Partnerships, and Alliances** -- Design and implement supplier certification programs, including process reviews and performance evaluations, and identify strategies for developing customer-supplier partnerships and alliances.
- **Supplier Logistics** -- Describe the impact purchased products and services have on final product assembly or total service package, including ship-to-stock, just-in-time (JIT), etc.

ASQ Code of Ethics

- Identify and apply behaviors and actions that comply with this code.

READINGS

Required Text

Westcott, R. T. (2006). The Certified Manager of Quality/Organizational Excellence Handbook. Third Edition. Milwaukee, WI. ASQ Press

REQUIRED STUDENT TASKS/ASSIGNMENTS

4. Examinations

Midterm Exam	100 points
Final Exam	100 points
Case Study Analysis	100 points
Weekly Assignments	100 points

5. Grading Scale

90 – 100%	= A
80 – 89%	= B
70 – 79%	= C
0 – 69%	= F

Case Studies will focus on quality models and theories and the systems required to maintain customer satisfaction. Students will be required to compare and contrast four quality concepts by analyzing models, theories, and processes for customer identification and segmentation.

Weekly assignments will include applications and analysis of customers and suppliers, quality principles for products and processes, quality standards, requirements, and specifications, cost of quality, six-sigma, continuous improvement techniques, quality system effectiveness, quality models and theories, MBNQA criteria for performance excellence, ISO and other third-party standards, quality philosophies, process improvement tools, innovation and creativity tools, and process management.

DISHONESTY POLICY STATEMENT:

“Students are expected to be honest in all academic work. A student’s placement of his or her name on any academic exercise shall be regarded as assurance that the work is the result of the student’s own thought, effort, and study.” Academic dishonesty is considered an offense to the department and university. Cases will be handled consistent with university policy, which specifies that “faculty members are to report all instances of academic dishonesty to Student Dispute Resolution Services.” Also, consistent with university policy, “faculty members retain authority to determine grade penalties in cases of academic dishonesty.” Departmental policy specifies that, at a minimum, a grade of zero will be issued for assignments involving academic dishonesty and additional grade penalties can be imposed including failing the course, or being removed from the program. In keeping with university policy, the incident will be reported to the Student Dispute Resolution Services office. (The complete academic honesty policy is located at www/ilstu/depts/sdrs/code_of_conduct.htm. All quoted statements in the departmental policy are from that document.)

DISABILITY CONCERNS:

Any student needing to arrange a reasonable accommodation for a documented disability should contact Disability Concerns at 350 Fell Hall, 438-5853 (voice), 438-8620 (TTY).