

IND 230

Applied Quality Control

COURSE OUTLINE

Prerequisites: None

Course Description:

Studies principles of inspection and quality assurance with emphasis on statistical process control. May include the setting up, maintaining, and interpreting of control charts, and review of basic metrology.

Quality within an organization is driven by the needs of customers. All members of a company demonstrate quality in how they carry out the processes to create and deliver its products and services.

This class will address the many facets that contribute to quality. The content is for individuals who must understand the importance of quality and take steps toward improving the practice of quality. Content covers standards, auditing, and improvement for all levels in industry.

Semester Credits: 3 Lecture Hours: 2 Lab Hours: 2

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Course Outcomes:

At the completion of this course, the student should be able to:

1. Identify how each department and function of a company plays a role in producing quality products for the customer.
2. Identify and describe the key components of the ISO 9000:2000 standard.
3. Understand the maintenance profession and describes various approaches to the practice of maintenance.
4. Describe the basic principles of lean manufacturing and compare them to traditional manufacturing approaches.
5. Describe the flow of products and information in a supply chain and explain the importance of customer service.
6. Describe the elements of Total Productive Maintenance (TPM) and explains how TPM helps reduce losses and waste.
7. Understand the 5S quality system and describe techniques for implementing 5S.
8. Understand the basics of cellular manufacturing, including the characteristics of cells and pull systems.
9. List basic concepts of Six Sigma, including data analysis, types of variation, common and special causes, the roles of Six Sigma team members, and the DMAIC method.
10. Understand the troubleshooting process and describe basic steps for identifying problems.
11. Discuss ways to identify, implement, and document effective solutions in the troubleshooting process.
12. Describe the steps of the internal auditing process and explains effective approaches for conducting audit interviews.
13. Describe the main concepts of statistical process control and explains how to recognize processes that are affected by special causes.
14. Compare ISO 9001:2000 and TS 16949:2002 and explains how their differences affect the standard operating procedures in a quality management system.
15. Describe the most common metrics used to measure timing, error, and costs and encourage continuous improvement in a lean system.
16. Understand the purpose and methods of flow charting, including spaghetti diagrams, process maps, and value stream maps.
17. Understand different strategies for reducing setup times, including ideas for streamlining operations and tactics for pre-staging processes.
18. Discuss the concept of total quality, as well as methods of implementing and measuring TQM within a company's structure.
19. Describe the sequence of steps for conducting kaizen events and explains common areas for process improvement.
20. Describe the elements used to create a value stream map and covers how to create a value stream map of the present state.
21. Understand strategies commonly used to create a future state value stream map based on findings from a present state value stream map.
22. Understand the Six Sigma DMAIC process improvement method and its primary goals, including the most common sub-steps and frequently used tools.

Discuss management roles and business categories for TQM, processes used to implement TQM, and methods of measuring TQM results

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Required Materials:

1. Tooling University (online subscription)
2. Internet access
3. Blackboard

Textbook (optional)*:

The following supplementary materials are available: [None](#)

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Topical Description:

Quality Overview 100
ISO 9000 Overview 110
Approaches to Maintenance 120
Lean Manufacturing Overview 130
Intro to Supply Chain Management 140
Total Productive Maintenance Overview 150
5S Overview 155
Cell Design and Pull Systems 160
Intro to Six Sigma 170
Troubleshooting: Identifying Problems 180
Troubleshooting: Understanding Causes and Effects 182
Troubleshooting: Taking Corrective Actions 184
Conducting an Internal Audit 200
SPC Overview 210
TS 16949:2002 Overview 220
Metrics for Lean 230
Process Flow Charting 240
Strategies for Setup Reduction 250
Approaches to Quality Management 255
Conducting Kaizen Events 260
Value Stream Mapping: The Present State 300
Value Stream Mapping: The Future State 305
Six Sigma Goals and Tools 310
Managing Practices for Total Quality 320

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Notes to Instructors

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