

# Quality Management - Web course

## COURSE OUTLINE

The field of quality management keeps advancing in both depth and breadth with the scope of application in manufacturing and services. Quality issues are now the concern of all organizations, including public and service sectors. The purpose of this course is to put quality management into perspective, and to highlight its critical importance, as well as to present in-depth ideas on different methodologies, tools and techniques proposed for product and process improvement. This web course will help readers understand opportunities for product/service or process improvement based on quality management principals.

## COURSE DETAIL

Module	Broad Topics	No of Hours/Module
<b>Module I. Introduction to Quality Management</b>	<ul style="list-style-type: none"> <li>Evolution of Quality Management</li> <li>Concepts of Product and Service Quality</li> <li>Dimensions of Quality</li> <li>Deming's, Juran's, Crosby's Quality Philosophy</li> <li>Quality Cost</li> </ul>	5
<b>Module II. Process Quality Improvement</b>	<ul style="list-style-type: none"> <li>Introduction to Process Quality</li> <li>Graphical and statistical techniques for Process Quality Improvement</li> <li>Graphical tools for data representation</li> <li>7 QC tools</li> <li>Sampling, sampling distribution, and hypothesis Testing</li> <li>Regression</li> <li>Control charts</li> <li>Process capability analysis</li> <li>Measurement system analysis</li> <li>Analysis of Variance (ANOVA)</li> <li>Design and Analysis of Experiment (DOE)</li> <li>Acceptance sampling plan</li> <li>TQM</li> <li>Leadership</li> <li>Lean and JIT Quality Philosophy</li> <li>Benchmarking</li> <li>Process failure mode and effect analysis (PFMEA)</li> <li>Service Quality</li> <li>Six sigma for Process Improvement</li> <li>ISO 9001 and QS 9000</li> <li>Quality Audit</li> <li>Quality Circles</li> </ul>	20
<b>Module III. Product Quality Improvement</b>	<ul style="list-style-type: none"> <li>Quality Function Deployment</li> <li>Robust Design and Taguchi Method</li> <li>Design Failure Mode &amp; Effect Analysis</li> <li>Product Reliability Analysis</li> <li>Six Sigma in Product Development</li> </ul>	15

## References:

- D. C. Montgomery, Introduction to Statistical Quality Control, John Wiley & Sons, 3rd Edition.
- Mitra A., Fundamentals of Quality Control and Improvement, PHI, 2nd Ed., 1998.
- J Evans and W Lindsay, The Management and Control of Quality, 6th Edition, Thomson, 2005
- Besterfield, D H et al., Total Quality Management, 3rd Edition, Pearson Education, 2008.
- D. C. Montgomery, Design and Analysis of Experiments, John Wiley & Sons, 6th Edition, 2004
- D. C. Montgomery and G C Runger, Applied Statistics and Probability for Engineers, John Wiley & Sons, 4th Edition.



NP-TEL

# NPTEL

<http://nptel.ac.in>

## Management

### Pre-requisites:

Knowledge on Basic Statistics

### Additional Reading:

- Garvin, D. A. (1984), What does Product Quality Really Means. Sloan Management Review, 25-43.
- Parasuraman, A., Valarie A. Z., and Berry L.L. (1985), A Conceptual Model of Service Quality and Its Implications for Future Research," Journal of Marketing, Vol 49, pp 41-50.

### Few Hyperlink of Interest:

- [http://www.iso.org/iso/qmp\\_2012.pdf](http://www.iso.org/iso/qmp_2012.pdf)
- [http://en.wikipedia.org/wiki/Six\\_Sigma](http://en.wikipedia.org/wiki/Six_Sigma)
- [http://en.wikipedia.org/wiki/ISO\\_9000](http://en.wikipedia.org/wiki/ISO_9000)

### Hyperlinks:

- [http://en.wikipedia.org/wiki/Quality\\_management](http://en.wikipedia.org/wiki/Quality_management)
- <http://asq.org/index.aspx>
- <http://www.apics.org/>
- [http://en.wikipedia.org/wiki/Quality\\_management\\_system](http://en.wikipedia.org/wiki/Quality_management_system)
- <http://asq.org/learn-about-quality/total-quality-management/overview/overview.html>

### Few Commercial Software Link for Statistical Data Analysis

- <http://www.minitab.com/en-US/default.aspx>
- <http://www.sas.com/technologies/analytics/quality/qc/index.html>
- <http://www.spss.co.in/>
- <http://www.jmp.com/>
- <http://www.statease.com/dx9.html>
- <http://www.statsoftindia.com/>

### Open Source Software Package for Statistical Data Analysis

<http://cran.r-project.org/bin/windows/base/>

### Coordinators:

**Dr. Indrajit Mukherjee**

Shailesh J. Mehta School of Management IIT Bombay