

# Advanced Quality Control

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## **Objectives:**

*This course provides the students a sound understanding of the principles, the basis, and advances of modern statistical methods for quality control and improvement. The SPC techniques taught in this course can be applied to any process. Computer software, such as Minitab and SPSS, are highly recommended for applying those techniques.*

## **References:**

*D.C. Montgomery. Statistical Quality Control: A modern Introduction, Sixth Edition, John Wiley & Sons, 2009.*

## **Course Outline:**

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**Chapter One:** Modern Quality Management and Improvement

**Chapter Five:** How SPC works

**Chapter Six:** Variables Control Charts

30 %

**Chapter Seven:** Attributes Control Charts

**Chapter Eight:** Determining Process and Measurement Systems Capability

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**Chapter Nine:** Other Statistical Process-Monitoring and Control Techniques

**Chapter Ten:** Advanced Control Charting Techniques (**Partial**)

10 %

**Chapter Eleven:** Multivariate SPC (plus Handouts)

**Chapter Fifteen:** Basic Acceptance Sampling Procedure

## **Selected topics**

- Quality Management
- Six Sigma
- Taguchi Methods, Process Optimization, Continual Improvement

**Project 20 %**

## **Evaluation:**

60 % (Exams; Project); 40 % Final Exam

## **Outcomes:**

*This course shall provide the graduate students the following:*

- Understanding the basics and the advances of SPC techniques
- Implementing the SPC techniques on real application using computer software
- Introducing quality management including quality assurance, total quality management, and six sigma.