

Devi Ahilya University, Indore, India Institute of Engineering & Technology				I Year M.E.(Industrial Engineering and Management) Full Time			
Subject Code & Name	Instructions Hours per Week			Credits			
IMR1E1 STATISTICAL QUALITY CONTROL AND TQM	L	T	P	L	T	P	Total
	Duration of Theory Paper: 3 Hours	3	1	1	3	1	1

Objective and Pre requisites: To develop the skills required for Quality consciousness among the students. Basics of Quality control through different techniques like theory of Control charts & Acceptance sampling. To build the Knowledge base of Total Quality Management, Six Sigma etc.

COURSE CONTENTS

UNIT-1

Quality Control:

Definitions, place of quality control in industries, quality control organization, difference between inspection and quality control, application of quality control in industries, economic of quality systems, quality assurance. Theory of Control Charts
Sample size and frequency of sampling, out control, control for variables and attributes and their application design of X and R charts, Process capability studies.

UNIT-2

Acceptance Sampling:

Single sampling planes, double sampling & sequential sampling planes, rectifying inspection for lots, sampling planes for continues production, selection of sampling planes for different situation, economics of acceptance sampling.

UNIT-3

Total Quality Management (TQM):

Evolution of total quality management , historical perspective, elements of TQM - Total employee involvement , elimination of waste and problem exposure , total quality control systems , Deming's wheel , Deming's 14 points – pros and cons in industrial engineering context , Philip Crosby philosophy , Juran philosophy , Ishikwa diagram , Just – in- Time philosophy design and development strategy in TQM – Quality function deployment.
Application of TQM to service type organization, service guarantees, case studies on application of TQM to services type organization, various quality award, cost benefit analysis, life cycle costing.

UNIT-4

Reliability:

Distributions encountered in controlling reliability mean time to failure , exponential failure density, MTTF, Weibull, failure density, measurement and tests , maintenance and reliability , life testing.

UNIT-5

Concepts & Application of 6 – Sigma Quality:

Comparison between 3-sigma & 6- sigma quality relationship between DPMO and standard normal variate , short term and long term yield cost and quality effectiveness of 6- sigma strategy , DMAIC approach to 6-sigma implementation application to service industry link between 6- sigma & DOE. ISO 9000 Series and SPC, Quality Circles

BOOKS RECOMMENDED:

- [1]. Mahajan M., *Statistical Quality Control*, Dhanpat Rai & Sons, 2001.
- [2]. Mitra A., *Quality Control Applications*, Pearson Education. 2e, 1998
- [3]. Sharma D. D, *Total Quality Management*, Sultan Chand & Sons. New Delhi, 2000
- [4]. Basterfield, *Total Quality Management*, Pearson Education, 2003
- [5]. Logothitis, *Total Quality Management*, PHI.

LABORATORY EXPERIMENTS:

1. Study and Analysis of set parameters relating to different mathematical distributions (Variable).
2. Study and Analysis of set parameters relating to different mathematical distributions (Discrete).
3. Construction & analysis of various process control charts.
4. Performance of Acceptance Sampling for a given set of lots.
5. Analysis of tools of related to total Quality Management like QFD, Fish bone diagram etc.
6. Case studies related to subject.