Devi Ahilya University, Indore, India Institute of Engineering & Technology				**IV Year B.E. (Mechanical Engg.) (Part Time)**			
Subject Code & Name	**Instructions Hours per Week**			**Credits**			
MEP7E2 SQC & TQM	**L**	**T**	**P**	**L**	**T**	**P**	**Total**
	2	**1**	**1**	**2**	**1**	**1**	**4**
Duration of Theory Paper: 3 Hours							

Learning Objectives:
1. The objective of the subject to introduce concepts of quality & quality control.
2. To impart the knowledge of Total Quality Management philosophy this is widely adopted by the business organizations now a day.
3. This course will enable the students to apply the concepts of Quality in the industries & get benefited.

Pre requisite(s): Industrial Engineering & Management & Materials Management.

COURSE CONTENTS

UNIT- I

Basic concepts of quality: Meaning of Quality, Quality of Design, Quality of Conformance, quality of performance, Quality characteristic, Quality functions, Costs of Quality, Value of Quality, Quality control, Quality Control and inspection, Quality Policy, Objectives and organization, Quality Assurance. Statistical concept, Frequency distributions.

UNIT- II

Statistical quality control: Concepts of Variations Process capability, variables and attributes, Theory of Control chart, Control chart for variable-x bar & R chart, Application of control chart for variables. Patterns of control charts. Control Chart for Attributes: **P, np. C** and demerit control charts & their application.

UNIT- III

Acceptance sampling: Fundamental concepts, OC Curve-construction of OC curve, Evaluation of parameters affecting OC curve, sampling plans: Single, Double, Multiple & Sequential sampling plans. Selection of sampling plan.

UNIT- IV

Total quality management: Introduction to TQM :- Feature of TQM System, Application & Benefits of TQM. Objective of TQM, Scope & Approach of TQM, Key Activity Areas of TQM, Principles of TQM, Total Quality management philosophy of Deming, Juran & Philip Crossby. TQM Models – Models for TQM Implementations, Strategic tools & techniques of TQM.

UNIT- V

Reliability & iso 9000: Basic Concept of reliability, Reliability and Quality, failures and failures modes, Causes of failure and unreliability, Maintainability and availability. System reliability models- System with components in series. Systems with parallel components. Need for Quality system, History of ISO: 9000 series of standards, features of ISO: 9000 series of standards.

Learning Outcomes:

Upon completing the course, student will be able to:
1. Understand the concept of Quality and basic statistical concepts.
1. Preparation of Process control chart in the different industrial process.
2. Understand the concepts of Acceptance Sampling.
3. Apply the basics of Total Quality Management and its implementation.
4. know the system reliability concept and ISO standards.

BOOKS RECOMMENDED:

[1] Kapur K.C. & Lamberson, *Reliability in Engg. Design*, Wiley Eastern.
[2] Grant E.L. & Leave Worth, *Statistical Quality Control*, Tata Macgrawhill.
[3] Juran and Gryan, *Quality Planning Analysis*, Tata Macgrawhill.
[4] Mahajan M.,*Statistical Quality Contro*l, Dhanpat Rai & Sons(P)Ltd, 3e, 2003.
[5] Sharma D. D., *Toatal Quality Management*, Sultan Chand & Sons, 2e,2004.
[6] Besterfield, *Toatal Quality Management*, Pearson Education, 3e,2005.

LIST OF PRACTICAL ASSIGNMENTS

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 Quality Problems.
7. Case studies related to Quality Control.
8. Case studies related to Quality Management.
