



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3172507

Semester – VII

Subject Name: Quality Engineering and Management

Type of course:

Prerequisite: Nil

Rationale:

Quality Engineering and Management is perhaps the most crying need in the Indian context particularly in the stupendous task of the nation building. The course aims to impart basic knowledge about various aspects of Quality Engineering and Management.

Teaching and Examination Scheme:

| Teaching Scheme | | | Credits C | Examination Marks | | | | Total Marks |
|-----------------|---|---|--------------|-------------------|---------|-----------------|----|----------------|
| L | T | P | | Theory Marks | | Practical Marks | | |
| | | | ESE (E) | PA (M) | ESE (V) | PA (I) | | |
| 3 | 0 | 2 | 4 | 70 | 30 | 30 | 20 | 150 |

Content:

| Sr. No. | Content | Total Hrs |
|---------|---|-----------|
| 1 | Introduction Quality Management Indian Companies Monopolize the Deming Awards in 2003, Quality Management- A conceptual frame work, Strategic Quality Management, Benchmarking. | 4 |
| 2 | Quality Standards and Business Excellence Models Quality system Standards, Bureau of Indian Standards, Agmark Grading and standardization, Quality council of India, International Organization for Standardization, Conformance to Specifications, Quality Assurance, Quality Circles, Quality audits, ISO 14000, Customer Operations Performance Centre (COPC) 2000 | 4 |
| 3 | Total Quality Management (TQM) W. Edwards Deming's Contribution to TQM, Juran's Contribution to TQM, Crosby's contribution to TQM, Ishikawa's contribution to TQM, Comparing the Quality Gurus, Total Productive Maintenance (TPM). | 6 |
| 4 | Service quality management and Cost of Quality Products and services, Classification of services, Service Quality, Measuring Service Quality, Prevention costs, Appraisal Costs, Internal and External failure costs, Cost of quality models, India's Quality Journey so far, Quality management in India, Quality related priorities of Indian companies, Case studies | 8 |
| 5 | Six sigma and Experimental design Meaning of Six sigma, The seven magnificent Quality tools, Introduction of experimental design, Taguchi Method in Experimental Design, Concept, Application of QFD, Case | 8 |



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| | Study. | |
| 6 | Statistical Quality Control Quality control-its introduction and benefits, Variation in processes: factors, process capability & Its analysis, control charts for variables and attributes, Establishing & interpreting control charts, Concept of Acceptance Sampling, sampling by attributes, single and double sampling plans, inspections by samples, AQL, LTPD, consumers and producer's risk, construction and use of operating characteristic curves, use of standard sampling tables and related IS, sampling by variables, Continuous sampling plan, vendor ratings. | 10 |
| | Intellectual Properties System Definition of intellectual property, importance of IPR; TRIPS and its implications, patent, copyright, industrial design and trademark. | 5 |
| | Total | 45 |

Suggested Specification table with Marks (Theory):

| Distribution of Theory Marks | | | | | |
|-------------------------------------|-----------|-----------|-----------|-----------|-----------|
| R Level | U Level | A Level | N Level | E Level | C Level |
| 20 | 20 | 30 | 10 | 10 | 10 |

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Quality Management by Donna C S Summers, Pearson
2. Total Quality Management, Dale Besterfield, Pearson
3. Intellectual Property Rights, Prbuddha Ganguli, TMH
4. Total Quality Management, Tapan Bose, Pearson
5. Probability and Reliability with Statistics, Trivedi, PHI
6. Statistical Quality Control By M. Mahajan
7. TQM in Service Sector, R.P.Mohanty and R.R.Lakhe
8. Total Quality Management, Arora ,Kataria
9. Total Quality Management, Subburaj, TMH

Course Outcomes:



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| Sr. No. | CO statement | Marks % weightage |
|---------|--|-------------------|
| CO-1 | Describe Quality Management | 20 |
| CO-2 | Evaluate Quality Standards & Business Excellence models. | 25 |
| CO-3 | Demonstrate TQM & Its various Tools. | 25 |
| CO-4 | Demonstrate SQC | 20 |
| CO-5 | Understand basics of IPR | 10 |

List of Experiments:

Experiments based on above syllabus topics