



Wollo University
Kombolcha Institute of Technology
Industrial Engineering Department



Course Title: Quality Management

Course code : MEng 5243, Credits: 3 ECTS: 4 Contact hour: (2 Lec+2Lab)

Target group: 5th year Mechanical Engineering Students all streams

Instructor Name: Moges M.

Email: mogesmabre@gmail.com

Course objective:

At the end of this course students will be able to understand;

- Quality control concept and techniques;
- The procedures for implementing quality engineering tools in industrial applications;
- Basic metrology and applied statistics for quality control applications in discrete-item manufacturing systems.

Course Description:

Concept of quality and quality control; Probability distribution and histogram; Inference about process quality; type-I error (α -error) and type II error (β -error); Design of control chart, average run length for chart performance, control charts for variables, control charts for attributes, and control charts; Introduction to modern quality control techniques; Quality costs; Basic statistical tools; control charts; Process capability, use of quality control software.

| Weeks | Course Outline | Activities |
|--------------|--|--|
| Week1 | 1. Introduction to Statistical Quality Control: Applications, organization, cost aspects | Group discussion & Mid [30%] |
| Week 2& 3 | 2. Theory of Control Charts: Control charts for attributes; average run length for chart performance. | |
| Week 4 | 3. Acceptance Sampling: Multiple and sequential sampling plans; Acceptance sampling by variables. | home study and group discussion |
| Week 5 | 4. OC Curve: Producer’s and consumer’s risk | |
| Week 6 & 7 | 5. TQC and TQM | Group Project Work & Home Study |
| Week 8 | 6. Strategies for Implementing Quality Systems: General implementation strategies; The Malcom Baldrige Award; ISO 9000; The Deming Prize; Quality Function Deployment; Other strategies; ISO-14000. | |
| Week 9 | 7. Reliability Study and Analysis: Design for reliability | |
| Week10 | Final Group Project Paper submission, Evaluation and Presentation. [30%] | |

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| Week > =11 | Home Study | Final Exam [40%] |
| Pre-requisites | No | |
| Co-requisites | No | |
| Text Book: Montgomery, D.C, 2001, <i>Introduction to Statistical Quality Control</i> , 4th edition, John Wiley and Sons. Farnum, Nicholas R., <i>Modern Statistical Quality Control and Improvement</i> . | | |
| References: 1. Daniel Kitaw, Industrial Engineering, AAU 2. Feigenbaum A., Total quality control, Mc GrawHill Inc., Singapore 3. Juran J M, Quality control Hand Book, McGraw Hill company, London | | |
| Teaching Methods: Lectures supported by tutorials, Seminars and presentations and Industrial visits | | |
| Projects: Case study analysis | | |
| Attendance Requirement: Minimum of 75% attendance during lecture hours; 100% attendance during seminars and presentation sessions, except for some unprecedented mishaps. | | |
| Hours per semester: 64 hours | | |