



Code: ING-IND/17

Credits: 9

Matter: Quality Management

Main language of instruction: Italian

Other language of instruction: English

Teaching Staff

Head instructor

Prof. Ruggero CAPRICCIOLI - ruggero.capriccioli@unicusano.it

Introduction

1. Objective of the course :

The Quality Management course aims to provide the student with basic knowledge of quality and the main issues associated with its management. The proposed approach is not limited to the basic concepts of quality as such, but proposes the analysis of the most important reference schemes, the most widely used methodologies and management techniques to support quality.

The main objective of the course is to provide the student with a comprehensive overview of quality management and the basic knowledge to be able to deal with the problems and critical issues related to it and to develop in the student the ability to understand the most common problems that may arise in an organization, fostering a familiarity with them and a critical management engineering approach to their resolution/management.

Objectives

2. Course Structure:

- Definitions and concepts of quality.
- The evolution of quality over time.
- Total Quality Management.
- The evolution of ISO 9001 management systems over time.
- The minimum elements regarding ISO 9001:2015-compliant management systems.
- FMEA methodology.
- EFQM model for excellence.
- Basic elements of statistical quality control and Six Sigma methodology.



Competencies:

A. Knowledge and understanding.

The student at the end of the course will have knowledge of the most important notions concerning quality, with particular reference to the basic concepts, the generally used techniques and the most widely adopted reference schemes also with reference to integrated environment-quality-safety systems. In addition, the student will acquire basic knowledge of the ISO 9001 certification mechanism, FMEA methodology, EFQM, and Six Sigma methodology.

B. Applying knowledge and understanding.

The student will be able to use the knowledge gained to recognize the most common issues that would arise in the business world, understand and possibly investigate issues that are typically cross-cutting to different business functions, but are typically the responsibility of a management engineer.

The student will also be familiar with ISO 9001:2015-compliant Quality Management Systems, including with reference to integrated environment-quality-safety systems, and will be able to apply the knowledge acquired to define approaches and solutions aimed at the pursuit of objectives of excellence in organizations, based on the logic of the most common quality tools and reference models and continuous improvement.

C. Making judgements.

The student will have acquired an overview of the most important approaches, reference patterns and methodologies in quality management, thus having the ability to independently judge the appropriateness of the solutions identified by the organizations with which he or she will be dealing in the course of his or her working life.

D. Communication skills.

For the topics proposed by the course, the student will be able to deal with the most common problems related to quality in a critical and technical manner, having acquired a set of notions and methodologies that allow comparison with the world of work. In addition, the student will assume specific technical terminology on the most important aspects of quality.



Syllabus

3. Programme of the course:

Subject 1. Generalities, basic concepts and evolution of Quality over time.

Generality.

The beginnings of quality.

Costs of poor quality.

Costs of quality.

The "hidden" costs.

Subject 2. Total Quality Management.

TQM results.

TQM Principles.

The three strong forces of TQM.

Benefits, barriers and most common mistakes in TQM implementation.

TQM and quality awards.

Subject 3. ISO 9001 Quality Management Systems.

Quality standards.

International Organization For Standardization.

Certification.

ISO 9001:1987.

ISO 9001:1994.

ISO 9001:2000.

ISO 9001:2008.

ISO 9001 certification: advantages and disadvantages.

Subject 4. ISO 9001:2015.

Generality.

New features of iso 9001:2015.

Integrated management systems.

Principles, terminology and structure.

Context of the organization.

Leadership.

Planning.

Support.

Operation.

Performance evaluation.

Improvement.

Quality management system.

Subject 5. FMEA: Failure Mode and Effects Analysis.

FMEA history.
FMEA elements.
FMEA process.
FMEA limits.
FMEA in not-manufacturing organizations.

Subject 6. EFQM: European Foundation for Quality Management.

EFQM in Europe and Italy.
The EFQM model for excellence 2013.
The EFQM model for excellence 2020.
Case studies.
Certifications of levels of excellence.
Global Excellence Award.

Subject 7. Statistical Quality Control. Six Sigma. The seven quality tools.

Generality.
Control in acceptance.
Control charts.
Six Sigma.
The seven quality tools.

Evaluation system and criteria

The examination consists of a written test tending to ascertain the ability to analyze and rework the concepts acquired. This includes open-ended questions or multiple-choice questions, for a total of 26 out of 30 marks.

In addition, two E-tivities. These need to be sent to the instructor in advance of the examination. Each e-tivity counts 2 marks for a total of 4 out of 30 marks.

Bibliography and resources

4. Materials to consult

Notes written by the instructor are available in Italian. The notes cover the course contents and examination programme.

5. *Recommended bibliography*

Suggested readings are:

- J.M. Juran, "Juran's Quality handbook", McGraw-Hill, seventh edition, 2017.
- Graeme Knowles, "Quality management", Bookboon, 2011.
- J.M. Juran, "Juran's Quality handbook", McGraw-Hill, fifth edition, 1999.
- "The Certified quality manager handbook", Quality Management Division, American Society for Quality, 1999.
- Introduction of the Deming Prize, The Deming Prize Committee, Juse, v202007.
- The Baldrige Criteria 101, 7/08/15.