Statistical Quality Control (m62217p)

Instructor: –

Elective Course, 3rd or 4th semester, 5 ECTS units

Course level: Graduate (MSc)

Language: Greek (or English if foreign students attend)

Course Description
Definition of quality. Basics on statistical quality control and reliability. An introduction to Acceptance sampling and Design of Experiments. Metrology and reliable measurements. Cause and effect chart and Pareto chart. The philosophy of statistical process control. Control charts for variables and attributes. Individual control charts. EWMA and CUSUM charts Capability indices. Control charts for autocorrelated data. Introduction to multivariate control charts. Control chart for Big Data. Basics of six sigma methodology.

Prerequisites
Students should have good knowledge of estimation and statistical inference. It is also useful to have basic knowledge of the statistical language R.

Target Learning Outcomes
The student after the course will acquire the skills needed to deal with problems of controlling and improving the quality and the reliability of products or services using statistical methods.

Recommended Bibliography
- Montgomery D (2019) Introduction to Statistical Quality Control, 8th Edition Wiley.
- Qiu P. (2013) Introduction to Statistical Process Control, CRC Press.

Teaching and Learning Activities
One three-hour lecture per week and study exercises as homework (some to be submitted).

Assessment and Grading Methods
70% Written examination.
30% project/assignment based on simulated data applying the methodologies and techniques described during the course accompanied with short scientific report.