COURSE OUTLINE

(1) GENERAL

SCHOOL	Engineering		
ACADEMIC UNIT	Mechanical Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	ΟΠ0700	**SEMESTER**	8th
COURSE TITLE	Quality Management		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	5	6
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialized general knowledge
PREREQUISITE COURSES:	There are no prerequisite courses. It is recommended that students who are interested in attending the course have completed successfully the following course: Applied Statistics I.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	https://mie.uth.gr/?page_id=18440

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is the introduction of students to the concept of quality control, the presentation of the main scientific methods and techniques of statistical quality control, and their application to product improvement.

Upon successful completion of this course, the student will be able to:

- Identify the appropriate quality control mathematical model for each application
- Solve this model and make the necessary interventions, if needed
- Select appropriate experimental designs and use the experimental results to improve product quality

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations
Decision-making
Working independently
Team work
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas
Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
……
Others…
…….

- Retrieving, analyzing and synthesizing data and information, with the use of necessary technologies
- Autonomous work
- Decision making
- Project design and management
- Exercising judgment and self-evaluation
- Promotion of free, innovative and inductive thinking

(3) SYLLABUS

Introduction to the concept of quality. Acceptance sampling for attributes: single and multiple sampling schemes, design by statistical and economic criteria, ELOT standard. Acceptance sampling for variables: plans based on fraction of defectives and process mean, design by statistical criteria, international standards. Process capability analysis. Control charts for attributes: fraction of defectives, number of defectives, number of defects. Control charts for variables: range, standard deviation, mean value, individual measurements. Design of control charts. Process improvement by statistical experiments: factorial and fractional factorial experiments, Taguchi methodology.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY ***Face-to-face, Distance learning, etc.***	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of class web page
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS*	

Activity	*Semester workload*
Lectures	70
Homework	35
Autonomous work	45
Course total	*150*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	I. Written final exams (70%) II. Homework (30%)

(5) **ATTACHED BIBLIOGRAPHY**

-Suggested bibliography:

- *Ταγαράς Γ.Ν., Στατιστικός Έλεγχος Ποιότητας, Εκδόσεις Ζήτη, 2001.*
- *Grant E.L., Leavenworth R.S., Statistical Quality Control, McGraw-Hill, 1988.*
- *Montgomery D.C., Introduction to Statistical Quality Control, Wiley, 1991.*
- *Ryan T.P., Statistical Methods for Quality Improvement, Wiley, 1989.*

- Related academic journals:

- *Journal of Quality Technology*
- *Quality and Reliability Engineering International*
- *Quality Engineering*