a) General		
School	ENGINEERING	
Academic unit	MECHANICAL ENGINEERING	
Level of studies	Undergraduate	
Course code	MM209E03	*Semester*	9
Course title	**Quality assurance management**	

Independent teaching activities	Weekly teaching hours	ECTS
Lectures	2	4.5
Laboratory exercises	2	

Course type	Knowledge deepening/consolidation
Course category	Compulsory Elective for Direction 2
Prerequisite courses	-
Language of instruction and examinations	Greek
Is the course offered to Erasmus students	No
Course website (url)	http://triblab.puas.gr

b) Learning outcomes and general competences

b1. Learning outcomes

Upon successful completion of this course, the student will be able to:
- Recognize the National, European and International authorities that are responsible and control quality issues in the field of mechanical engineering.
- Distinguish among the terms standardization, certification, accreditation and calibration, - recalling knowledge previously obtained in other courses,- in order to deepen in directives and guidelines imposed by the technical specifications.
- Follow the evolution of technical standards and European regulations, in order to use them fluently during their post-graduate professional career.

b2. General competences

Upon completion of the course, the students would develop, also, general competences, concerning:
- Search, analysis and synthesis of requirements, imposed by directives and guidelines of technical specifications.
- Decision making capabilities on the appropriate correction and prediction actions.
- Understanding the requirements for generic approaches in a worldwide environment.
- Project planning and management.
- Capability of performing individual- and team-working case studies.
- Ability to conceive the universal character of Quality Assurance Management Systems.

c) Syllabus

The theory lectures content of the course concerns:

Introduction of the concept of Quality. Presentation of current Quality Control methods emphasizing on statistical techniques, quality acceptance criteria, production process control and quality improvement during the design stage. Failure Mode and Effect Analysis (FMEA) methodology application.

The theory is supported by examples of particular applications in the Mechanical Engineering practice. The standard series ISO 9000:2008, ISO 17025 and ISO 22000 are analysed.

The laboratory content of the course includes:
• Familiarization of the students with the basic knowledge/ concepts on Quality Assurance

	Systems
	• Analysis of quality management/ inspection qualitative and quantitative tools (Pareto analysis, measurements errors, uncertainty of measuring devices, statistical quality control)
	• Analysis of the ISO 17025 standard for the needs of the mechanical sector, by virtual search/ operation of an enterprise in the fields of mechanical testing and chemical analysis, accredited according to ISO 17025.

d) Teaching and learning methods - Evaluation

Delivery	Lectures of theory and laboratory exercises face-to-face, within the classroom.
Use of information and communications technology	Teaching using ICT, Laboratory education using ICT and experimental devices, communication and electronic submission

Teaching methods	Activity	Semester workload
	Lectures	26
	Tutorials	
	Laboratory exercises	26
	Computational exercises	
	Individual work	78
	Course total	130

Student performance evaluation	Theory: Intermediate assessment and written final examination. Laboratory: evaluation of practical skills and multiple-choice exams.

e) Suggested bibliography

1. Juran, J.M. and Defeo, J.A. (2010). Juran's Quality Handbook. McGraw-Hill.
2. Gryna, F.M. (2001). Quality Planning and Analysis. McGraw-Hill.
3. Antony, J.and Kaye, M. (1999). Experimental Quality. Kluwer.
4. Feigenbaum, A.V. (1991). Total Quality Control. McGraw-Hill.
5. Grant, E.I. and Leavenworth, R.S. (1980). Statistical Quality Control. McGraw-Hill.
6. Montgomery, D.C. (1997). Design and Analysis of Experiments. John Wiley and Sons Inc.
7. Current ISO technical specifications and European Directives.