

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
ACADEMIC UNIT	FINANCIAL AND MANAGEMENT ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	ΔΕ0107	SEMESTER	10
COURSE TITLE	QUALITY SYSTEMS		
INDEPENDENT TEACHING ACTIVITIES <i>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</i>		WEEKLY TEACHING HOURS	CREDITS
		3	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Track Compulsory		
PREREQUISITE COURSES:	-		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	http://www.fme.aegean.gr/en/undergraduate-programme		

(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

Upon successful completion of the course the student should be confident about the following:

- (1) Understanding of basic concepts referring to Quality Systems, and especially of the ISO 9001:2000,
- (2) Understanding of Quality Tools and Methods
- (3) Understanding of Statistical Process Control methods and tools,
- (4) Understanding of the concept of SIX-SIGMA for improvement of the business operations.
- (5) Handling problems for selecting the proper statistical method for the Quality Surveillance,
- (6) Understanding the nature of real-world quality systems.

- (7) Using typical quality methods in solving real-world case studies.
 (8) Adopting proper tools for quality improvement and quality systems analysis.

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?

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

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Working in an interdisciplinary environment

Production of new research ideas

Criticism and self-criticism

Production of free, creative and inductive thinking

(3) SYLLABUS

Description

The course introduces students to the principles of quality control for engineers. Topics further examined include statistical modeling and sampling techniques. The course includes analysis of the following: (a) corporate strategic planning, (b) employee involvement & empowerment, (c) continuous improvement, and the role of quality assurance, (d) the cost of quality the ISO 9000 series registration/certification process, (e) understanding and implementing ISO 14001 team building, (f) self-directed work teams, problem solving, systems & process improvement, (g) world-class manufacturing systems how to lead a business process improvement effort, (h) Total quality management or TQM, (i) theory of the six Sigma, (j) managing the customer satisfaction process, (k) analysis of case studies in quality, (l) Taguchi & Shainin Techniques in Quality Management

Module Contents (Syllabus)

1. Introduction to Quality Systems and Statistical Tools
2. Corporate strategic planning, employee involvement & empowerment, continuous improvement, and the role of quality assurance
3. Team building, self directed work teams, problem solving, systems & process improvement, world-class manufacturing systems
4. The cost of Quality

5. Presentation of ISO 9001:2000 sections
6. Statistical Methods Useful in Quality control & Improvement
7. Lot-by-Lot Acceptance Sampling, Simple, Double, & Multiple Sampling, the OC Curve
8. Dodge-Romig tables, Rectifying Inspection, AOQL Plans, LTDP Plans, Estimation of the process average.
9. Process Control and Control Charts for Variables , Control Charts for x and R
10. Charts Based on Standard Values, Interpretation of x and R Charts, the Effect of Nonnormality on x and R Charts, the Operating-Characteristic Function, the Average Run Length
11. Control Charts for Attributes , The Control Chart for Fraction Nonconforming, Development and Operation of the Control Chart, Variable Sample Size, Nonmanufacturing Applications, the Operating-Characteristic Function and Average Run Length Calculations
12. The SIX-SIGMA method
13. Factorial and Fractional Factorial Experiments for Process Design and Improvement, Examples of Designed Experiments In Process Improvement, Guidelines for Designing Experiments, Factorial Experiments

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of web sources for elaboration of projects	
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>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.</i> <i>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</i>	Activity	Semester workload
	Scheduled Lectures	39 hrs
	Partial (mid-semester) exams	46 hrs
	Preparation for the final exam	50 hrs
	Course total	135 hrs
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>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</i> <i>Specifically-defined evaluation criteria</i>	Final exam on course notes for 100% of the final mark of the student. Mid-semester exams offer up to 20% bonus in the final mark.	

are given, and if and where they are accessible to students.	
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(5) ATTACHED BIBLIOGRAPHY

- *Suggested bibliography:*

A) Course Notes

B) Additional Reading

(1) P. Zalimidis and G. Dounias (2006), Quality Management Systems, Pyxida Editions, (in Greek)

(2) S. Avlonitis, Elements of Quality Control and Quality Assurance, Ellin Ed. (in Greek)

(3) J. Bank, Total Quality Management (Greek Translation, Giourdas Editions)

(4) Joseph M. Juran, 2000, Juran's Quality Handbook, McGraw-Hill, New York, USA

(5) Thomas Pyzdek, Paul A. Keller, (2003), Quality engineering handbook, 2nd Ed. Publisher Marcel Dekker

- *Related academic journals:*