

COURSE MODULE OUTLINE

General information

SCHOOL	SCHOOL OF SCIENCE AND TECHNOLOGY		
PROGRAM COURSE	Quality Management and Technology		
LEVEL OF STUDY	POSTGRADUATE		
COURSE UNIT CODE	DIP61	YEAR OF STUDY	2nd
COURSE TITLE	Special Topics regarding Quality		
INDEPENDENT TEACHING ACTIVITIES <i>in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
Weekly teaching hours * 32 weeks		17-18	20 ECTS
<i>Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4</i>			
COURSE TYPE Compulsory, Optional, Optional mandatory	Compulsory		
PREREQUISITE COURSES:	DIP50 or DIP51		
LANGUAGE OF INSTRUCTION AND EXAMS:	GREEK		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	https://www.eap.gr/education/postgraduate/annual/quality-management-and-technology/topics/ Each module has its own space in the Learning Management System of EAP (http://study.eap.gr), with controlled access (use of code) for students and teaching staff.		

(2) LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

APPENDIX B

- *Guidelines for writing Learning Outcomes*

On successful completion of the study of this thematic unit,

With the first part, students will be able to:

- *perceive the importance and significance of Environmental Management in a company or organisation through the analysis of key environmental problems*
- *access and understand the legislative framework governing Environmental Management issues at national, European and international level*
- *understand and analyse the philosophy and content of the ISO 14001 environmental standard and will be able to study the results of its implementation*
- *to understand and apply the LCA methodology in real enterprises and organisations*
- *Finally, they will acquire knowledge about eco-labels and their practical contribution to environmental management*

With the second part, students will be able to:

- *acquire theoretical knowledge and the ability to interpret and evaluate the paragraphs of the ISO 9001 standard*
- *learn the types of inspections, identify good and bad practices in the inspection process through case studies*
- *compile compliance or non-compliance reports and evaluate the progress of the implementation of the standards in the company or organisation*
- *understand the role and dynamics of the quality inspector and his/her team in the implementation of Quality Management Systems*

With the third part, students will be able to:

- *understand the importance of measurement and recognise the functions of a control and testing laboratory*
- *understand the basic principles and requirements of traceability of measurements and the stages of the accreditation process*
- *understand the requirements of ISO 17052, and assess the criticality of meeting them*
- *draft procedures and documents of the EMS and to monitor and evaluate the progress of the implementation of the standard*
- *identify objectives and measurement indicators in the context of ISO 17052 and assess their contribution to improving the effectiveness of the standard*

With the fourth and final part, students will be able to

- understand the importance of reliability and gain knowledge of its parameters
- understand the concept and types of failure through examples and applications
- become familiar with and use reliability measurement methods MTTF, FTA, RBD, using statistic packages such as Minitab
- handle and process reliability data and distinguish levels of reliability data
- recognise the difference between the concepts of risk and reliability through examples and applications
- understand the importance and significance of maintenance in quality improvement
- analyse and use important concepts such as downtime analysis, average repair time, etc. through examples
- design and evaluate maintenance policies and will be able to organise a maintenance department using the philosophy of Total Productive Maintenance

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,

Adapting to new situations

Decision-making

Individual/Independent work

Group/Team work

Working in an international environment

Working in an interdisciplinary environment (Other.....citizenship, spiritual freedom, social

Introduction of innovative research

Project planning and management

Respect for diversity and multiculturalism

Environmental awareness

Social, professional and ethical responsibility and sensitivity to gender issues

Critical thinking

Development of free, creative and inductive thinking

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awareness, altruism etc.)

Search for, analysis and synthesis of data and information by the use of appropriate technologies,

Decision-making

Individual/Independent work

Group/Team work

Working in an interdisciplinary environment

Introduction of innovative research

Project planning and management

Critical thinking

Development of free, creative and inductive thinking

(3) COURSE CONTENT

The unit DIP 61 "Special Topics regarding Quality" covers four thematic areas in 4 volumes listed below:

Volume A: Environmental Management Systems

Volume 1 covers issues related to Environmental Problems and the Legislative Framework (Greece, Europe, International Community) and analyses the Major Environmental Problems such as ozone depletion, greenhouse gases, biodiversity loss, air pollution, water

pollution, etc. The concepts of Environmental Management are also analysed, a history of the development of Environmental Management Systems is given, the European approach EMAS is described, and Responsible Care is described. The main part is the presentation and analysis of the 14001 standard (Requirements of the standard, Comparison of 14001 and 9001 standards). Finally, the Community Eco-Management and Audit Scheme – EMAS is presented, how EMS Certification is done and what is the role of environmental inspectors, Product Life Cycle Analysis (LCA), and the different Eco-labels.

Volume B: Quality Systems Inspection

Volume 2 essentially covers the issue of Quality Systems Inspections and focuses mainly on the ISO 9001:2008 standard. Basic concepts of quality are described and the requirements and paragraphs of the standard are presented and analysed. The main types and kinds of inspections are described, the process of planning and implementing the inspection is analysed, as well as the role of the inspector and the inspection team.

Volume C: Organization of laboratories, controls and tests

Volume 3 presents the basic concepts of measurement, metrology and control and testing laboratories. The emphasis is on the analysis of the ISO 17025:2005 standard (requirements of the standard, design and implementation of the standard). Also presented and analysed are the key measurement indicators and the definition of objectives in the implementation of ISO 17025:2005 in Testing and Inspection laboratories.

Volume D: Reliability and Maintenance

Volume 4 consists of two thematic areas, Reliability and Maintenance. The first part presents the basic concepts/definitions of reliability and discusses the concept of failure. The characteristics and techniques of reliability assessment are discussed in detail, and emphasis is also placed on the use of reliability data in risk analysis. The second part presents the basic concepts of maintenance and discusses its importance and significance. The systems and maintenance policies are then analysed and the second part concludes with a presentation and analysis of Total Productive Maintenance (activity, results).

(4) TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i>	Distance education with five Group Counseling Meetings (OSS) during the academic year on weekends.	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY <i>Use of ICT in teaching, Laboratory Education, Communication with students</i>	Remote meetings tools (cisco webex), Presentation software (e.g. power point), Additionally, the students use office automation tools, web browsers and e-reader for digital books.	
COURSE DESIGN <i>Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of</i>	Activity/Method	Annual workload
	5 OSS (* 4 hours)	20
	Preparation of Assignments (4 assignments * 50 hours)	200

<i>bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.</i> <i>The study hours for each learning activity as well as the hours of selfdirected study are given following the principles of the ECTS.</i>	Examination	3
	Individual study	337
	Total	560
STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS <i>Detailed description of the evaluation procedures:</i> <i>Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other.....etc.</i> <i>Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.</i>	Elaboration of written assignments during the academic year, the average of the grades of which participates in the formation of the final grade of module by 30%, if there is a passable in the final or repetitive examinations. In the final written exams the grade of the written assignments participates in the formation of the final grade of module by 70%. All the criteria are posted, both in each written assignment (in the LMS study.eap.gr), as well as in the general regulation of HOU at: https://www.eap.gr/education/study-regulations/	

(5) SUGGESTED BIBLIOGRAPHY:

- Suggested bibliography

Volume A: Environmental Management Systems, HOU, Patras, 2008.

Volume B: Quality Systems Inspection, EAP, Patras, 2001.

Volume C: Organization of laboratories, controls and tests, HOU, Patras, 2008.

Volume D: Reliability and Maintenance, EAP, Patras, 2002.

PACK A (166 p.): DIP61/B Inspections of quality management systems

PACK B (116 p.): DIP61/D System Reliability Issues (M. Koutras)

- Related scientific Journals:

Quality and Reliability Engineering International

Reliability Engineering and System Safety

IEEE transactions on Reliability

Accreditation and Quality Assurance

Environmental Quality Management

International Journal of Metrology and Quality Engineering

International Journal of Quality & Reliability Management

Quality Engineering

Software Quality Journal